

**Workshop on Biomedical Data
Sharing in the U.S. and China:
*Opportunities for Collaboration
through the National Cancer Institute
cancer Biomedical Informatics Grid® (caBIG®)***

Executive Summary





**Workshop on Biomedical Data Sharing in the U.S. and China:
Opportunities for Collaboration through the
National Cancer Institute cancer Biomedical Informatics Grid® (caBIG®)**

**June 22, 2010, 2:00– 5:00 p.m.
Chinese Academy of Medical Sciences, Beijing, China**

Background

Cancer is a major public health concern worldwide: more people die every year from cancer than HIV, malaria, and tuberculosis combined,¹ and by the year 2020, cancer will likely kill more than 10 million people annually.² Today, the economic toll from cancer is nearly \$895 billion.³

More than 50 percent of new cancer cases and two-thirds of cancer deaths occur in developing countries.⁴ The burden of cancer in China is particularly staggering—it is the leading cause of death⁵ and kills more than 1.5 million Chinese each year.⁶

Now is an opportune time to expand cancer research partnerships between U.S. and Chinese scientists. There is a long and successful history of collaboration in several areas of cancer research, and large numbers of Chinese scientists who have trained in the U.S. are returning to China. These research leaders understand the U.S. biomedical research system and are frequently interested in maintaining connections to U.S. laboratories

U.S. and Chinese scientists can work together to complete studies that yield scientific results relevant on an international basis. For example, U.S. and Chinese investigators can team up to study cancers that are particularly common in China (e.g. gastric, liver, and esophageal cancers) but still have a devastating impact in the U.S. and other parts of the world. In addition, U.S.-China partnerships can focus on investigating rare cancers, or environmental or occupational exposures not as commonly observed in the U.S.

To build on these and other opportunities, NCI established the Office of China Cancer Programs (OCCP) in 2009 to promote, support, and inform the development of cooperative research projects between U.S. and Chinese scientists, research teams, and institutions. OCCP assists NCI Offices, Divisions, Centers, and Programs (including the NCI Center for Biomedical Informatics and Information Technology which oversees the caBIG® program) with an interest in expanding partnerships in China. Encouraging partnerships in biomedical data sharing between the U.S. and China is a high priority for the NCI because of extensive computational talent and informatics capability in China, and because developing a common culture and mechanisms to promote data sharing among U.S. and Chinese scientists is critical to the success of partnerships in many research areas.

¹ Matthers and Loncar (2006) PLoS Medicine 3(11) e44.

² World Health Organization.

³ The Global Economic Cost of Cancer. LIVESTRONG and American Cancer Society. Available online at <http://www.cancer.org/acs/groups/content/@internationalaffairs/documents/document/acspc-026203.pdf>. Accessed September 8, 2010.

⁴ Boyle and Levin eds. *World Cancer Report*, 2008.

⁵ Health Information Report 2008, Ministry of Health, Center for Health Statistics and information.

⁶ GLOBOCAN 2002 Database



To build communication and explore opportunities for promoting cancer research data sharing between the U.S. and China, NCI and the Chinese Academy of Medical Sciences (CAMS) hosted a joint workshop in Beijing on June 22, 2010 that showcased efforts to share biomedical data among institutions in the United States and China using the cancer Biomedical Informatics Grid® (caBIG®). The meeting reviewed ongoing collaborative efforts between institutions in the U.S. and China and established a relationship between the caBIG® program and leading experts in China.

CAMS includes a national network of research institutions and hospitals throughout China focusing on research and treatment of many types of disease. CAMS has an extensive history of cooperation with U.S. researchers, and strong expertise in both cancer research (led by efforts at the Cancer Institute/Hospital of CAMS) and biomedical data sharing through the national Medical and Health Scientific Data Sharing Network.

Attendees exchanged information about biomedical data sharing efforts in the U.S. and China, received an overview and introduction to the caBIG® program, and identified possible opportunities for future cooperative efforts.

We at the National Cancer Institute are prepared to roll up our sleeves to work hand in hand with our Chinese colleagues to figure out how we can join our unique expertise and our unique contributions in a manner where the whole is much more than the sum of the parts.

-Ken Buetow, Ph.D., Director, NCI CBIIT

We want to work with the NCI to improve data sharing that will advance cancer research.

-Anyou Wang, Director, Department of International Cooperation, CAMS

Data Sharing: A Global Vision

Increasingly, cancer research is becoming a global enterprise. While current technologies may differ internationally, biomedical researchers working in several areas of science—from basic discovery to clinical research and care—must manage, integrate, analyze, and exchange vast stores of diverse data to make and apply scientific discoveries. Additionally, collaboration and data exchange across international borders will allow scientists to conduct meta-analyses of international data sets and access research discoveries and clinical observations derived from different geographical populations.

During the meeting, workshop participants identified common needs, regardless of geographic location or size, including increased access to mature informatics tools and standards and common infrastructure to enable data exchange.

Overview of National Data Sharing Efforts

China

The Chinese government has provided financial support for data sharing since 2004, when a pilot project was initiated for a “Medical and Health Scientific Data Management and Service System.” This pilot demonstrated the feasibility of a “Medical and Health Scientific Data Sharing Network” to link data from clinical centers and hospitals, the China CDC, and local health centers in an effort to help analyze data and develop standards. Now, the project is being



implemented as the “Population and Health Scientific Data Sharing Network,” with plans to create a broad platform to enable information exchange on a national and international scale. Currently, the national biomedical data sharing effort is led by Dr. Liu Depei, President of CAMS, who links the goals of the program back to the “Healthy China 2010” program that was initiated in 2008 by China’s Health Minister Chen Zhu.

The BioMedical Informatics Center of China (BMICC) is one of several participants in the National Scientific Data Sharing Network for Population and Health and is made up of 12 institutes from four provinces throughout China. BMICC was established to provide a technical platform for integrating and sharing scientific data; to connect and integrate databases related to the study of health and disease in China; and to create a national data sharing center for basic medical researchers. The database is populated primarily with standardized information from laboratories and health surveys and the Institute for Basic Medical Sciences maintains the technical integrity of the platform.

To-date the effort has linked 25 data sources: six population survey databases, 13 molecular mechanism databases, four model organism databases, and two experiment material databases; and, to date, 37 countries have the capabilities to access and use this shared resource. Plans for the future include integrating additional data sources and continuing discussions with the NCI and National Institutes of Health (NIH) around bilateral cooperation on scientific data sharing.

More information about the national biomedical data sharing effort in China can be found (in Chinese) at www.ncmi.cn

United States

In the U.S., the NCI has developed caBIG® to speed research discoveries and improve patient outcomes by linking researchers, physicians, and patients throughout the cancer community using a shareable and interoperable infrastructure, services and applications, standard rules, and common vocabularies.

The goal is to build an infrastructure to connect people, deploy standards and common vocabularies, and develop software applications and services are available to analyze and share cancer research data and clinical outcomes. This modular, interface-focused approach ensures that any individual or organization can use caBIG® open standards to build a single module—or a comprehensive integrated system—to quickly and seamlessly access data.

caBIG® is founded on the principles of open source, open development, open access, and federation, meaning that anyone who wants to download, modify, use, or extend the technology may do so in accordance with local or institutional regulations. Currently, more than 2,300 researchers from 700 institutions—representing 17 countries, including China—are using caBIG® to accelerate the discovery of new approaches for the detection, diagnosis, treatment, and prevention of cancer.

The ultimate goal of caBIG® is not only to integrate all stages of the current discovery and development paradigm but to incorporate an *analysis* component, wherein researchers and clinicians feed data back into the system so that findings can be rapidly incorporated into clinical practice or the development and refinement of new research hypotheses. Such an approach is known as the ***Rapid Learning Healthcare System***. As the U.S. moves towards the full digitalization of healthcare through electronic health records (EHRs), caBIG® standards-based interoperability will enable organizations to move data between constituents to make this approach possible.



To learn more about specific caBIG® applications visit <https://cabig.nci.nih.gov/inventory>. Additional information about caBIG® is available at <http://cabig.cancer.gov>.

Examples of Current caBIG®-Enabled Collaborations

Two examples of ongoing collaborations between Chinese and U.S. teams that are supported by caBIG® were described in detail at the workshop:

University of California, San Francisco and Peking Union Medical College

The University of California, San Francisco (UCSF) and Peking University Medical Center (PUMC) have established ongoing partnership to create joint programs in cancer research and training.

Currently, the two parties are establishing a Memorandum of Understanding (MoU) that outlines the creation of joint research teams which will be led by co-investigators from each institution. In the first phase of the collaboration, these research teams will be established in the areas of lung cancer, breast cancer, brain tumors, hepatocellular carcinoma, and genito-urinary cancers. Under the partnership, PUMC faculty will be enrolled in a training program at the UCSF Helen Diller Comprehensive Cancer Center, where they will participate in a variety of activities including tumor boards, clinical and research conferences, protocol review meetings, clinical trial meetings, and general cancer research seminars, before returning to serve as co-leaders of joint trials with UCSF.

The objectives of the partnership will be to improve the understanding of cancers that are common in China and the key genes and proteins involved in the progression of these diseases, as well as to identify new targets that drive the tumors and conduct early stage clinical trials to investigate novel therapeutic agents. Additionally, the groups will conduct epidemiologic research aimed at developing methods to accurately diagnose cancer, earlier.

Underlying this ambitious plan is the need for bioinformatics to support clinical and biospecimen operations. Together, the groups will establish annotated, robust tissue banks and a clinical trials database to support the joint research efforts.

To support these needs UCSF is creating a Cancer Data Warehouse, where clinical trial data, survey data, operational data, sequencing data, scheduling, billing, tissue sample data, cancer registry data, and data from Electronic Health Records (EHRs) may be stored. The warehouse is being constructed to accept heterogeneous data from multiple data architectures, and will serve as a single data resource for patients, providers, and researchers. Three portals exist to the data warehouse—and caGrid is planned as another means of access—where information may be viewed and exported by various constituencies as needed. This work will be supported by a variety of caBIG® applications and infrastructure already in-use at UCSF.

Duke Comprehensive Cancer Center and Beijing Cancer Hospital, Peking University

A partnership between Duke Comprehensive Cancer Center and Beijing Cancer Hospital, Peking University was formalized through a MoU in 2007 that stated the intent to develop new cooperation to create new preventative and diagnostic tools as well as novel therapies. Building on this MoU, training workshops were held in Beijing and at Duke University in 2007 and 2008.



Duke Comprehensive Cancer Center has been an active contributor to the development of caBIG® technology since the program was initiated and has extensive experience with caBIG® applications, most notably in the clinical trials space. The institution serves as the Clinical Trials Management Systems (CTMS) Knowledge Center, providing support and maintaining web-based resources to aid others in developing, integrating, and using caBIG® technology to support clinical research. Building on this expertise, Duke worked with Beijing Cancer Hospital to use caBIG® as the platform to support a co-operative trial: A Phase II Study of Abraxane® and Carboplatin as First-Line Treatment for “Triple Negative” (Demonstrating no Expression for Estrogen, Progesterone, or HER2 Receptors) Metastatic Breast Cancer. The primary objective of the study was to compare the progression-free survival (PFS) in Chinese patients with this type of breast cancer to that of American patients. Additionally, investigators sought to explore the molecular biological mechanisms that reacted to the treatment regimen and to assess the safety and tolerability of a combination regimen to treat Chinese women with “triple negative” stage IV or interoperable stage III metastatic breast cancer.

caBIG® supported the study in multiple ways: the Central Clinical Database (C3D), a clinical trials data management system that collects data using standard case report forms (CRFs), was used to enroll patients from both sites; the caBIG® Clinical Trials Suite, a comprehensive set of open-source software tools that facilitates electronic management of clinical trials and associated data and enables comprehensive sharing and integration of clinical research information, was used to support trial and protocol management, from patient consent to managing budgets and invoicing; and the Clinical Data Management System (CDMS) was used to manage research data to ensure information was collected in a unified format using international data standards.

Opportunities and Challenges

Reluctance among the scientific community to share data is a cultural issue in both the U.S. and China, and workshop participants suggested that developing new funding opportunities to encourage data sharing will be important to overcome these barriers. However, all participants agreed that data sharing and collaborative efforts have the power to dramatically enhance research efforts by organizations in both countries. Issues related to language barriers were also raised, such as the need for software applications for native speakers of both English and Chinese.

During the workshop discussions, caBIG® was identified as an excellent platform for supporting international collaboration due to its federated approach—each participating organization can contribute its unique resources and expertise, share them as appropriate with local laws and customs, and obtain access to other geographically distributed data and resources. caBIG® provides a framework and infrastructure that minimizes the technical barriers associated with data exchange and that recognizes and accommodates local differences.

Workshop discussions identified several specific opportunities for collaboration through clinical epidemiology studies and prevention trials at the Cancer Institute/Hospital at CAMS (CICAMS), described in more detail below. CICAMS is the National Cancer Center in China, treating more than 10,000 inpatients and 240,000 outpatients each year. Several activities of the CICAMS Department of Epidemiology have informed national initiatives in China, including: a national cancer prevention & control strategy administered by the Chinese Ministry of Health (MOH); a national cervical cancer prevention consortium; establishment of national guidelines



for early detection, diagnosis and treatment of nine types of cancer; and two demonstration centers for cervical cancer prevention and control.

In addition to specific collaboration opportunities with CICAMS, the need to develop additional caBIG® applications in China to support development of protocols for information exchange and to facilitate the actual exchange of information was also addressed.

Based on the discussion at the workshop, several areas were identified as potential candidates for collaboration:

- **Use caBIG® to facilitate sharing of data from the Chinese cancer database maintained by the CICAMS Department of Epidemiology (cancernet.cicams.ac.cn) and comparable data in the U.S.** Access to data generated in China would expand opportunities for researchers in both countries to conduct *in silico* and epidemiological investigations. Additionally, data exchange will allow collaboration without the associated cost and time to establish formal partnerships.
- **Develop of Chinese language versions of clinical trial data management systems working through the National Biomedical Data Sharing Effort in China.** The development of Chinese versions of caBIG® clinical trial management software will reduce the expense and human resources needed to train end users in China, and accelerate the adoption of caBIG® applications in Chinese hospitals. This will enrich the amount and diversity of data currently available to users through caGrid, increasing the value of this network for all.
- **Adopt existing caBIG® applications (CTMS – Clinical Trials Management Software) by CAMS to support studies in cancer epidemiology.** Existing caBIG® clinical trial tools will both support existing cancer epidemiology studies in China (including those led by the CICAMS Department of Epidemiology) and promote collaboration with U.S. scientists working in this area.
- **Develop new caBIG®-interoperable applications by Chinese institutions.** The caBIG® community would be enriched by increasing contributions from Chinese experts to build new applications that are tailored to specific needs of Chinese researchers and institutions.
- **Possible identification of caBIG® Service Support Providers (SSPs) in China.** International support services will complement existing web- and U.S.-based resources to lower barriers to entry for international participants by ensuring technical challenges are addressed in a timely fashion. In addition to offering help desk services and support to deploy caBIG® infrastructure and applications, SSPs may be licensed to develop novel caBIG® applications, or to customize or extend existing systems to become caBIG® interoperable.

Acknowledgements

The National Cancer Institute and the participants of this workshop wish to express their appreciation to the Chinese Academy of Medical Sciences for its generous support.



Appendix 1: Selected Participants

Philip Brooks, Beijing United Hospital
Jun Du, Cancer Hospital, CAMS & PUMC
Jing-Dong Han, Systems Biology, CAS
Jie Hu, Zhongshan Hospital
Yong Jiang, Cancer Hospital, CAMS & PUMC
Hongsheng Lin, Guang An Men Hospital
Zhengwei Lin, Cancer Hospital, CAMS & PUMC
Binlei Liu, Cancer Hospital, CAMS & PUMC
Aiping Lu, CAMS
Youyong Lv, Beijing Cancer Hospital
Zhen Meng, CNIC, CAS
Sorena Nadaf, University of California, San Francisco
Yi Peng, Institute of Basic Medicine, CAMS & PUMC
Youlin Qiao, Cancer Hospital, CAMS & PUMC
Haili Qian, Cancer Hospital, CAMS & PUMC
Chenxu Qu, Cancer Hospital, CAMS & PUMC
Julie Schneider, Office of China Cancer Programs, NCI
John Speakman, Center for Biomedical Informatics and Information Technology, NCI
Guangliang Shan, Institute of Basic Medicine, CAMS & PUMC
Lichao Sun, Cancer Hospital, CAMS & PUMC
Lixin Sun, Cancer Hospital, CAMS & PUMC
Ni Shi, Cancer Hospital, CAMS & PUMC
Weiqing Wan, Beigin Tiantan Hospital
Anyou Wang, Department of International Cooperation, CAMS
Dianne Wang, Beijing United Hospital
Heng Wang, Institute of Basic Medicine, CAMS & PUMC
Jinzhao Wu, Capital Bio Corp
Fengbo Xie, Capital Bio Corp
Chengli Xu, Institute of Basic Medicine, CAMS & PUMC
Yang Xu, Cancer Hospital, CAMS & PUMC
Huanming Yang, BGI-Shenzhen
Hubing Yang, Beijing Cancer Hospital
Xiaolin Yang, Institute of Basic Medicine, CAMS & PUMC
Ling Yin, PLA Hospital
Liwei Zhang, Beijing Tiantan Hospital
Shuren Zhang, Cancer Hospital, CAMS & PUMC
Zhengguo Zhang, Institute of Basic Medicine, CAMS & PUMC
Xiaohang Zhao, Cancer Hospital, CAMS & PUMC
Xinna Zhou, Beijing Cancer Hospital
Chengbin Zhu, Department of Sci-Tech Administration, CAMS
Shuyu Zu, Institute of Basic Medicine, CAMS & PUMC



Appendix 2: Agenda

2:00 p.m. – 2:10 p.m.	Welcome from the Chinese Academy of Medical Sciences (CAMS) <i>Anyou Wang, Director, Department of International Cooperation, CAMS</i>
2:10 p.m. – 2:20 p.m.	Welcome from the National Cancer Institute (NCI) <i>Ken Buetow, Ph.D., Director, NCI CBIIT</i> (by video message)
2:20 p.m. - 2:40 p.m.	Overview of China's Scientific Data Sharing Project on Basic Medicine <i>Heng Wang, Ph.D., Director of the Institute of Basic Medical Sciences, CAMS</i>
2:40 p.m. – 3:00 p.m.	Introduction and Principles of caBIG® <i>John Speakman, Associate Director of Clinical Trials Products and Programs, NCI CBIIT</i>
3:00 p.m. – 3:10 p.m.	Demonstration of caBIG® Clinical Trials Suite <i>John Speakman</i>
3:30 p.m. - 3:40 p.m.	Demonstration of caTissue Suite <i>John Speakman</i>
3:40 p.m. – 4:00 p.m.	University of California San Francisco (UCSF) and Peking Union Medical College-CAMS Cancer Centers Program Partnership and Activities <i>Sorena Nadaf, Director, Translational Bioinformatics and Chief Information Officer, Helen Diller Family Comprehensive Cancer Center, UCSF</i>
4:00 p.m. – 4:20 p.m.	Overview of the Use of caBIG® Tools for Joint Clinical Trials Research between Duke and Peking University <i>Jun Ren, M.D., Ph.D., Executive Director, Clinical Trials Center, Beijing Cancer Hospital, Peking University</i>
4:20 p.m. - 4:30 p.m.	Potential Collaboration on Clinical Epidemiological Studies and Prevention Trials in China <i>Youlin Qiao, M.D., Ph.D., Director, Department of Cancer Epidemiology, Cancer Institute/Hospital of CAMS</i>
4:30 p.m. – 5:00 p.m.	Open Discussion: Opportunities for Future U.S.-China Cooperation



Appendix 3: Presentations

- Overview of China's Scientific Data Sharing Project on Basic Medicine
Heng Wang, Ph.D., Director of the Institute of Basic Medical Sciences, CAMS
- Introduction and Principles of caBIG®
John Speakman, Associate Director of Clinical Trials Products and Programs, NCI CBIIT
- University of California San Francisco (UCSF) and Peking Union Medical College-CAMS Cancer Centers Program Partnership and Activities
Sorena Nadaf, Director, Translational Bioinformatics and Chief Information Officer, Helen Diller Family Comprehensive Cancer Center, UCSF
- Overview of the Use of caBIG® Tools for Joint Clinical Trials Research between Duke and Peking University
Jun Ren, M.D., Ph.D., Executive Director, Clinical Trials Center, Beijing Cancer Hospital, Peking University
- Potential Collaboration on Clinical Epidemiological Studies and Prevention Trials in China
Youlin Qiao, M.D., Ph.D., Director, Department of Cancer Epidemiology, Cancer Institute/Hospital of CAMS



Basic Medical Data sharing at BMICC

Heng Wang, Professor, Director

Institute of Basic Medical Sciences

Chinese Academy of Medical Sciences

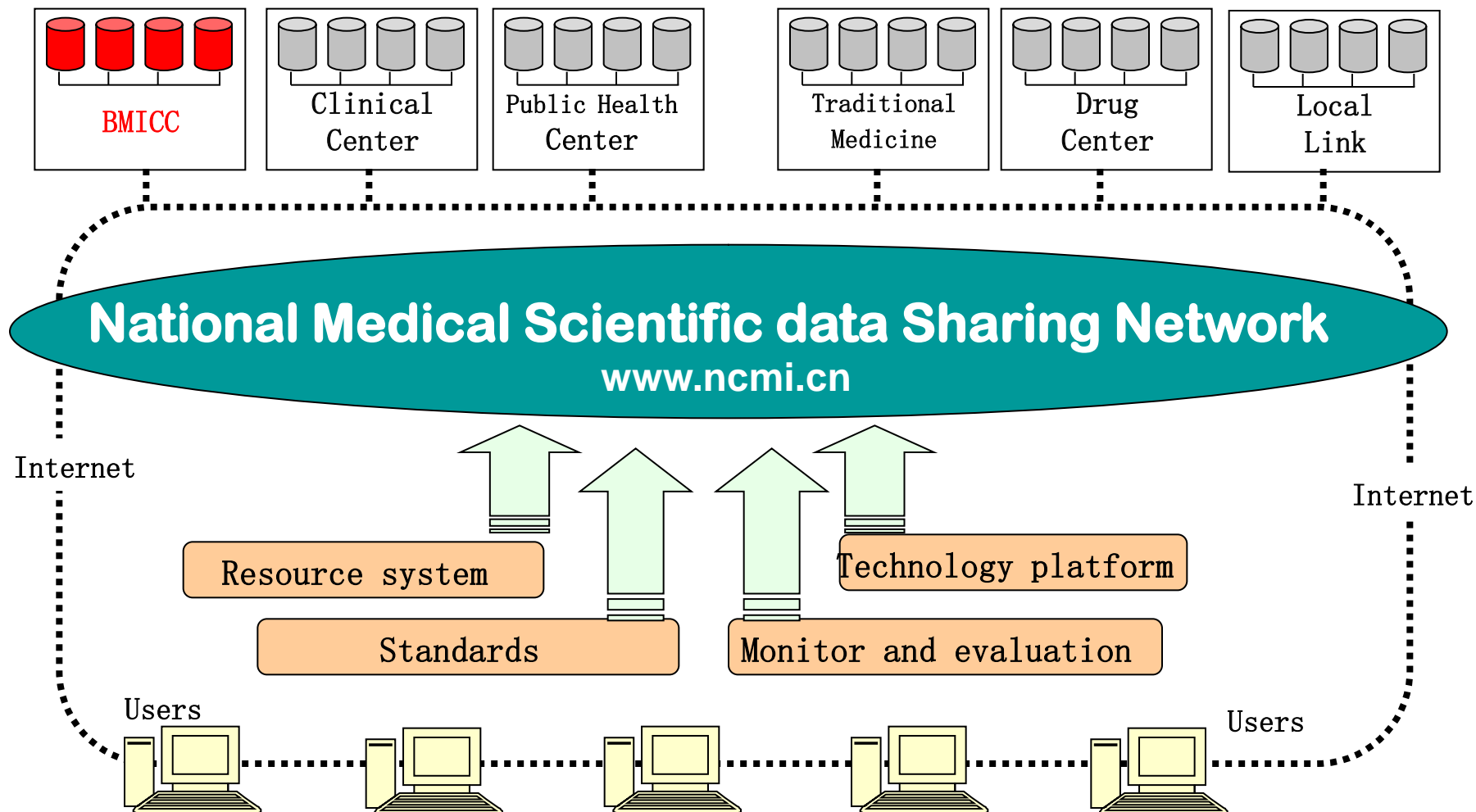
School of Basic Medicine

Peking Union Medical College

ABOUT BMICC

BioMedical Informatics Center of China

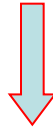




Review

National Medical Scientific Data Sharing Network

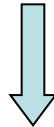
(2004-2009)



**National Scientific Data Sharing Network for
Population and Health** (2009)

National Biomedicine Database

(2001-2006)



BioMedical Information Center of China (BMICC)

(2004 -)

Co-Units

12 Institutes/Universities, 4 Provinces,

- **Institute of Basic Medical Sciences, CAMS**
- **Center for Bioinformatics in Peking University;**
- **Institute of Biophysics of CAS;**
- **Institute of Computing Technology of CAS ;**
- **Beijing Genomics Institute ;**
- **Beijing Genomics Institute at Shenzhen**
- **Bioinformatics Division Tsinghua University;**
- **Beijing Proteome Research Center;**
- **Model Animal Research Center of Nanjing University**
- **Capital Institute of Pediatrics;**
- **Third Military Medical University ;**
- **Fuwai Hospital, CAMS**

GOAL OF BMICC

- ★ To establish the technical platform for integrating and sharing the scientific data
- ★ To collect and integrate most valuable and available databases related to the study on health and diseases in China
- ★ To create a national scientific data sharing center for basic medical researchers and various users in different requirements

Resources of Data

Original

Requirements

Quality



Research Funding

National Science Fund of China (NSFC)
National Science Fund for Distinguished Young Scholars, NSFC
Beijing Natural Sciences Foundation
The National Program for Key Basic Research Projects (973)
The National High Technology Research and Development Program (863)
The Research Fund for Doctoral Program of Higher Education
Project of Ministry of Science and Technology
International cooperation program from NIH, US
International Cooperation program between China and Europe
Chinese Medical Board (CMB) from America



Data from Laboratory





Data from Health Survey



Data from Health Survey

Administration Model

JOINY CONFERENCE

Authoritativeness

- ▣ Strategies
- ▣ Aim and assignment of the sub-centers
- ▣ Financial plan



ACADEMIC COMMITTEE

Academic activities

- ▣ Technical advisory
- ▣ Monitor and revise
- ▣ Evaluation

MANAGEMENT OFFICE

Implementation

- ▣ Reports to the Sharing Network
- ▣ Collect and integrate database
- ▣ Maintain the work on technique platform and network

RULES AND STANDARDS I

- ☆ **Technical standards for data sharing**
- ☆ **The metadata standards**
- ☆ **The terminological standards in medicine**
- ☆ **The standards on the quality control for data searching**

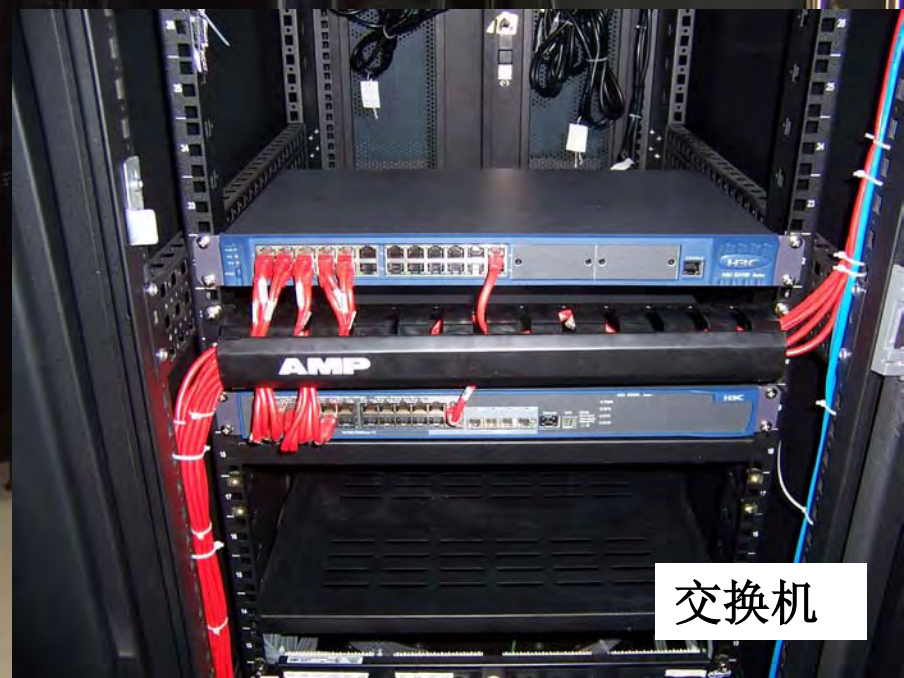


RULES AND STANDARDS II

- ★ **The service guide**
- ★ **A manual for developing technique framework**
- ★ **Guide for data set execution.**
- ★ **A rule for data backup manage**



Implementation & Progress



交换机



National Science & Technology Infrastructure Center
National Science Data Sharing Project

National Medical Scientific Data Sharing Network Biologicine information Center

Home Page Database Search Online Tools MetaData Query Standard Criterion Data Center About BMICC Login

Metadata Query

Metadata Query

**Original scientific data
produced in China**

Molecular Mechanisms Database

NcRNA(The database of all kinds of noncoding RNA)
NPInter(Functional interactions between noncoding RNAs and proteins Database)
ATID(Alternative Translational Initiation Database)
dbRES(dbRES: A web-oriented annotated RNA Editing Site)
dbNEI(database for Neuro-Endocrine Immune)
SPD(Secreted Protein Database)
SynDB(Synapse Database)
The Biology Database FTP Mirror Site
Yanhuang Database **new!**
Human Urinary Proteome Database **new!**
database of potential target genes for clinical diagnosis and immunotherapy of human carcinoma **new!**
natural sense-antisense transcripts database **new!**

Biomodel Organism Database

ChickVD(Chicken Variation Database)
_SilkDB(Silkworm Knowledgebase)
PigGIS(Pig Genomic Informatics System)
TFDB(Transcription Factor Databases)

Experiment Material Data Resource

China National Cell Resources Confederation **new!**
Phenotype Database for Genetically Engineered Mouse Disease Models **new!**

The aim of Sharing Scientific Data Program: Base on the public and communal resource, support by the research center, to build a data and service system with reasonable, global, and intellectual frame. To improve the public policy, rule management system. To cultivate manager and intelligent with high personality and high ability of utilization information and public

About BMICC

miRNA Identification Based on Sequence and Structure

MethCGI(Predict the methylation status of CpG islands in the human brain)
SubMito(Predict protein submitochondria locations from its primary sequence)
PhoScan
snap - a snap annotation platform **new!**

Project-specific databases

base **new!**
and integrated search **new!**

Research Developments

Science **New biomarker for heart fa..**
Blood levels of resistin, a hormone independently
24 hour
service
Muscular protein bond -- strongest yet f..2009-07-21
Overfishing and evolution..2009-07-21
Slotted buses keep passengers cool..2009-07-21
Practice makes perfect -- motor memory p..2009-07-21
JCI table of contents: July 20, 2009..2009-07-21
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'Invisibility cloak' could protect ac
more >>

Satisfaction investigate for BMICC

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☐ b. Relative satisfactory
☐ c. Dissatisfactory

Vote

Search

Search...

language/语言

English/ 中文

Associate Of Bmicc



Data Center



Related Links

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Ministry of Health P.R China.
National Science & Technology Infrastructure Center

Medical Scientific Data Sharing

The Total Visits 238270 person-time



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Integrated and Shared

25 databases

- Population Survey Database (6)
- Molecular Mechanism Database (13)
- Biomodel Organism Database (4)
- Experiment Material Data Resource (2)

Sharing Database (1)

Database —— population, individual person	Sub-centers
(1) Physiological Reference Database of Chinese	IBMS
(2) Psychological Reference Database of Chinese	IBMS
(3) Sub-health database of Chinese	IBMS
(4) Maternal and Child Nutrition Reference Database	Capital Institute of Pediatrics
(5) A Multi-center Survey on Cardiovascular Diseases in Chinese	CAMS
(6) Visible Human Construction	Third Military Medical University

Sharing Database (2)

Database — Molecular studies	Sub-centers
(7) NcRNA (The database of all kinds of noncoding RNA)	ICT CAS
(8) NPInter (Functional interactions between noncoding RNAs and proteins Database)	IB CAS
(9) ATID (Alternative Translational Initiation Database)	Tsinghua University
(10) dbRES (dbRES: A web-oriented database for annotated RNA Editing Site)	Tsinghua University

Sharing Database (3)

Database	Sub-centers
(11) dbNEI (database for Neuro-Endocrine-Immune)	Tsinghua University
(12) SPD (Secreted Protein Database)	Peking University
(13) SynDB (Synapse Database)	Peking University
(14) The Biology Database FTP Mirror Site	Peking University
(15) Human Urinary Proteome Database	IBMS
(16) Database of potential target genes for clinical diagnosis and immunotherapy of human carcinoma	ICT CAS
(17) Natural sense-antisense transcripts database	Peking University

Sharing Database (4)

Database	Sub-centers
(18) TFDB (Transcription Factor Databases)	Peking University
(19) Natural sense-antisense transcripts database	Peking University
(20) Database on antiCODE	IB CAS
(21) Liver Expression Profile	Beijing Proteome Research Center
Animal Modes	
(22) SilkDB (Silkworm Knowledgebase)	Beijing Genomics Institute
(23) PigGIS (Pig Genomic Informatics System)	Beijing Genomics Institute

Sharing Database (5)

Database	Sub centers
(23) ChickVD(Chicken Variation Database)	Beijing Genomics Institute
Experimental Materials	
(24) China National Cell Resources Confederation	IBMS
(25) Phenotype Database for Genetically Engineered Mouse Disease Models	Model Animal Research Center of Nanjing University

Online Tools

▣ **MiRAlign**

▣ **MethCGI**

▣ **SubMito**

▣ **PhoScan**

User groups in China

- **Scientists / specialists**
- **Health officials**
- **Students**
- **Public**

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[全部列出](#)

主机

[全部列出](#)

[最近访问日期](#)

[无法解析的IP地址](#)

[搜索引擎网站的机器人](#)

[全部列出](#)

[最近访问日期](#)

浏览器统计:

[每次访问所花时间](#)

[文件类别](#)

[存取次数](#)

[全部列出](#)

[入站处](#)

[出站处](#)

操作系统

[版本](#)

[无法得知](#)

浏览器

[版本](#)

[无法得知](#)

反相链接:

[来源网址](#)

[由那些搜索引擎转介](#)

[由那些其他网站转介](#)

搜索

[用以搜索的短语](#)

[用以搜索的关键词](#)

摘要

报表日期

2009年 08月 月报

首次访问日期

2009年 08月 01日 08:01

最近访问日期

2009年 08月 08日 22:45

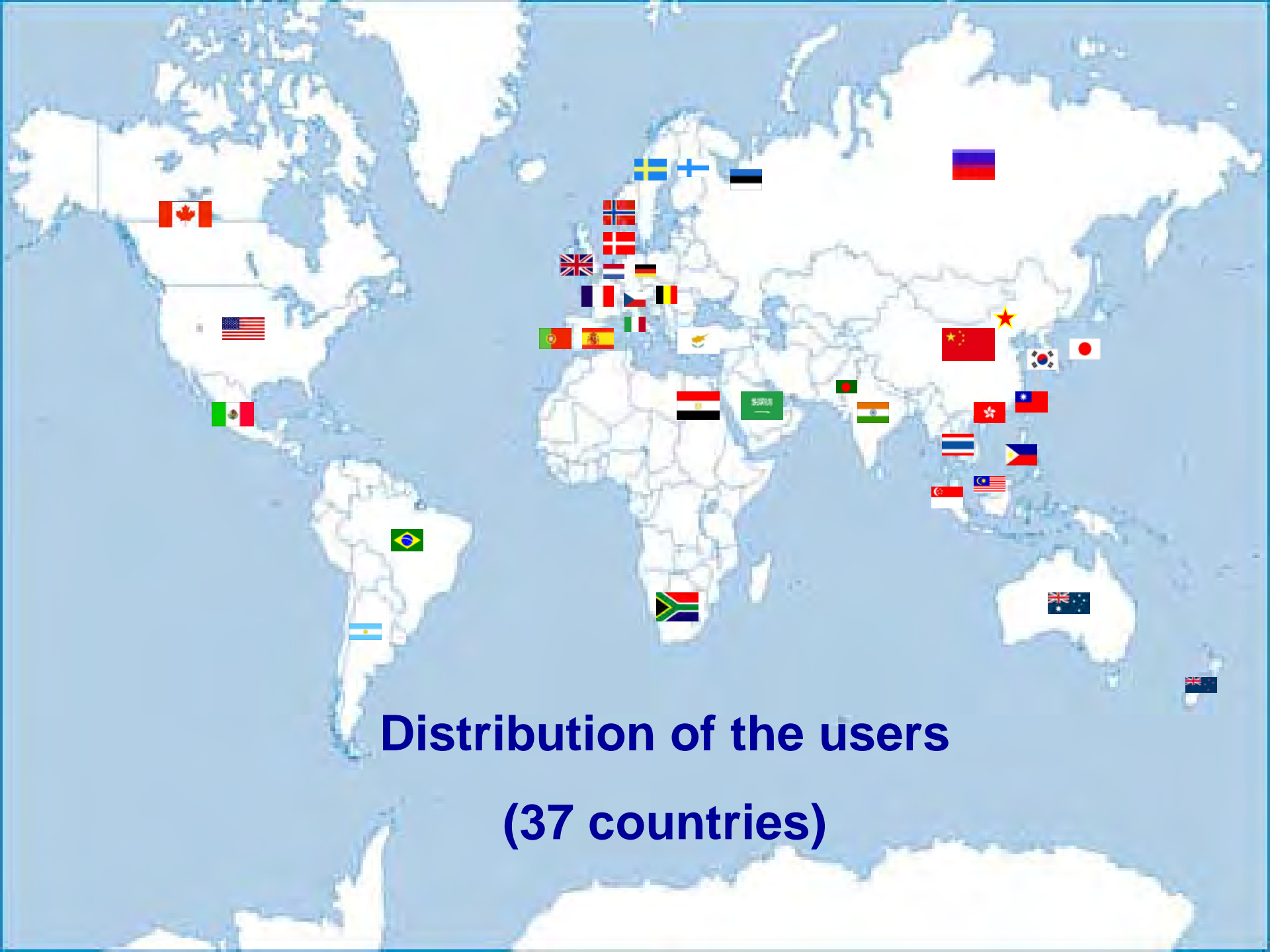
	访问者	访问人次	网页数	文件数	字节
浏览器流量 *	1104	2373 (2.14 访问人次/访问者)	9561 (4.02 网页数/访问)	18248 (7.68 文件数/访问)	40.25 M字节 (17.36 K字节/访问)
非浏览器流量 *		1449	1583	605.76 K字节	

* 非浏览的流量包括搜索引擎机器人，蠕虫病毒产生的流量和非正常的HTTP相应

按月历史统计



月	访问者	访问人次	网页数	文件数	字节
一月 2009	2600	8470	39068	79041	228.25 M字节
二月 2009	2859	9270	37525	65922	184.57 M字节
三月 2009	3459	12912	69304	124290	378.58 M字节
四月 2009	3365	12354	61174	94977	282.14 M字节
五月 2009	2712	9134	51341	81072	180.87 M字节
六月 2009	2495	8224	46652	88967	196.04 M字节
七月 2009	2571	8824	49217	107648	206.98 M字节
八月 2009	1104	2373	9561	18248	40.25 M字节
九月 2009	0	0	0	0	0



**Distribution of the users
(37 countries)**

VISITERS from all of the world

(Jan. 2008 --- July 2009)

Countries	person times
United States	97322
China	36688
Australia	30567
Germany	2936
Japan	737
Great Britain	423
South Korea	351

Data Sharing Between CHINA & USA from BMICC

Chinese physiological reference dataset

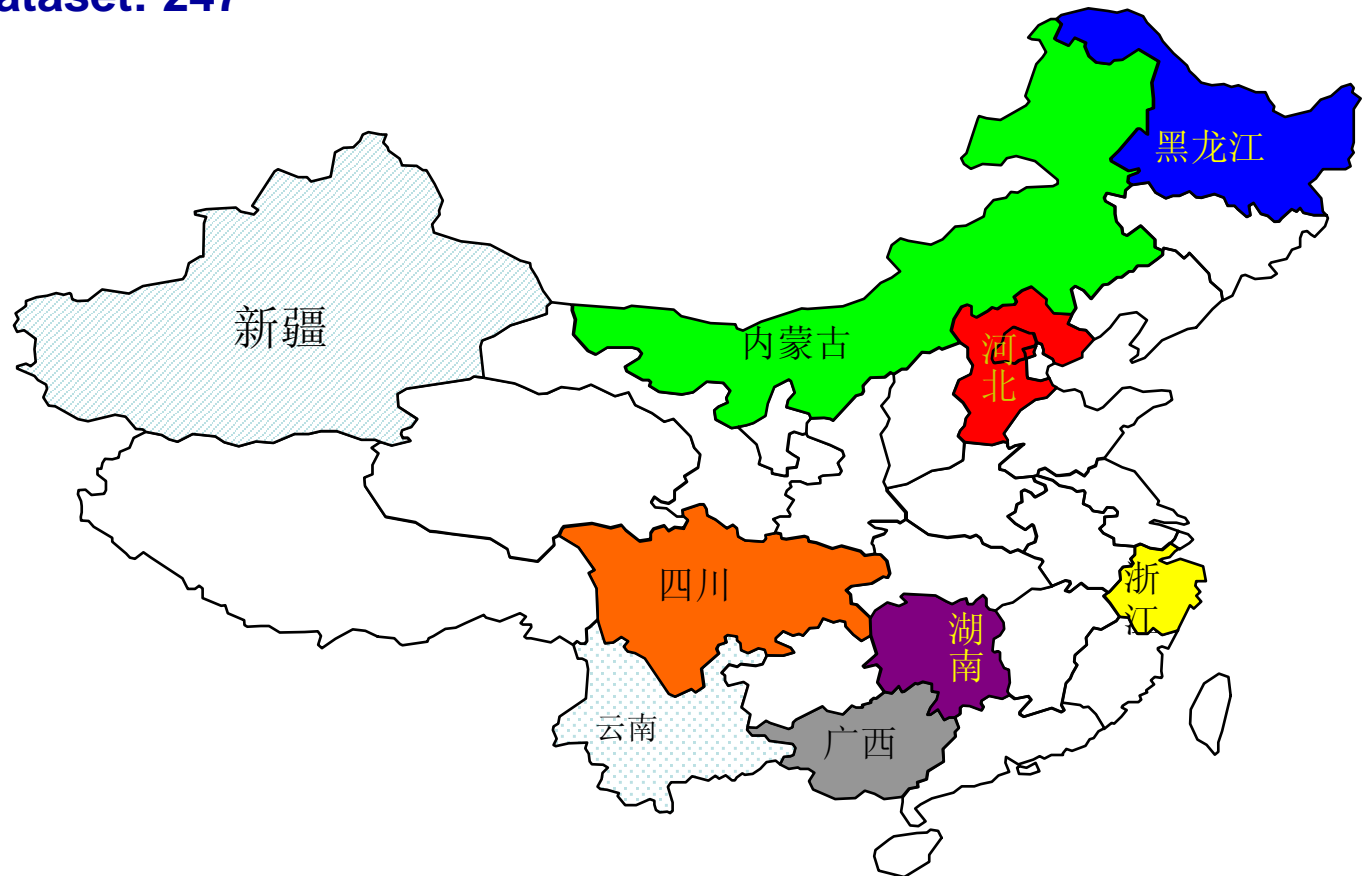
Physiological Reference of Health Population in China

Population: 130,000

Provinces: 9

Races: 8

Variables in dataset: 247



Data profile of Chinese physiological reference

The categories of variables surveyed

- Characteristics of demography
- Anthropometric measures
- Blood cell counts
- Blood biochemical variables
- Urinalysis
- Electrocardiogram ECG
- Immunological analysis
- variables of circulation system
- variables of respiratory system

Published Data for 30,000 population



Continued survey & Data expanding

- Continue survey
- More genome data of individual person
- Proteomics data
- Government support (the twelve five plan)

Yan Huang Database

Yan Huang database

(Beijing Genomics Institute at Shenzhen)

- The genome, named as YH, is a very start of YanHuang Project, which aims to sequence 100 Chinese individuals in 3 years.
- To illustrated the personal genome data in a MapView, which is powered by GBrowse.
- A new module was developed to browse large-scale short reads alignment. This module enabled users track detailed divergences between consensus and sequencing reads.



- Efforts on designing the YH database are helpful attempts to organize and present personal genome data, which is a useful resource for genomic and medical researches.
- As the third published personal genome, YH diploid genome accelerates the discovery of disease gene and mutation in Asian population.




[Mapview](#)
[Blast](#)
[Download](#)
[Craig Venter's Genome](#)
[James Watson's Genome](#)
[Home](#) [About](#) [FAQ](#) [Contact Us](#) [Help](#)
search

Chr 01

YH SNP ID

YH SNP0144025

Introduction

On October 11th, 2007, Beijing Genomics Institute at Shenzhen (BGI-Shenzhen) announced the completion of first diploid genome sequence of a Han Chinese, a representative of Asian population. The genome, named as YH, is a very start of YanHuang Project, which aims to sequence 100 Chinese individuals in 3 years.

We set up this 'YH database' to present the entire DNA sequence assembled based on 3.3 billion reads (117.7Gbp raw data) generated by Illumina Genome Analyzer. In total of 102.9Gbp nucleotides were mapped onto the NCBI human reference genome (Build 36) by self-developed software SOAP (Short Oligonucleotide Alignment Program), and 3.07 million SNPs were identified.

We illustrated the personal genome data in a MapView, which is powered by GBrowse. A new module was developed to browse large-scale short reads alignment. This module enabled users track detailed divergences between consensus and sequencing reads. In total of 53,643 HGMD records were used to screen YH SNPs to retrieve phenotype related information, to superficially explain the donor's genome. Blast service to align query sequences against YH genome consensus was also provided.

Data Statistics		
Nucleotide	Total	117.7Gbp
	Map to genome	102.9Gbp
	Coverage of genome	99.97%
Polymorphism	SNP	3.07M
	Indel	135262
	Structural Variation	2682

Our efforts on designing the YH database are helpful attempts to organize and present personal genome data, which is a useful resource for genomic and medical researches. As the third published personal genome, YH diploid genome accelerates the discovery of disease gene and mutation in Asian population. Companying with other personal genome projects, this endeavor will achieve fundamental goals for establishing personal medicine.

What's new?

Data Statistics		
Nucleotide	Total	117.7Gbp
	Map to genome	102.9Gbp
	Coverage of genome	99.97%
Polymorphism	SNP	3.07M
	Indel	135262
	Structural Variation	2682

ARTICLES

The diploid genome sequence of an Asian individual

Jun Wang^{1,2,3,4*}, Wei Wang^{1,3*}, Ruiqiang Li^{1,3,4*}, Yingrui Junqing Zhang¹, Jun Li¹, Juanbin Zhang¹, Yiran Guo^{1,7}, Bir Huiqing Liang¹, Zhenglin Du¹, Dong Li¹, Yiqing Zhao^{1,7}, Y Ines Hellmann⁹, Michael Inouye⁸, John Pool⁹, Xin Yi^{1,7}, Jing Guoqing Li¹, Zhentao Yang¹, Guojie Zhang^{1,7}, Bin Yang¹, Dawei Li¹, Peixiang Ni¹, Jue Ruan^{1,7}, Qibin Li^{1,7}, Hongmei Zh Jianguo Zhang¹, Jia Ye¹, Lin Fang¹, Qin Hao^{1,7}, Quan Chen Shuang Yang¹, Fang Chen^{1,7}, Li Li¹, Ke Zhou¹, Hongkun Z Guohua Yang^{1,2}, Zhuo Li¹, Xiaoli Feng¹, Karsten Kristiansen Richard Durbin⁸, Lars Bolund^{1,11}, Xiuqing Zhang^{1,6}, Songg

Here we present the first diploid genome sequence of an Asia coverage using massively parallel sequencing technology. We genome to 99.97% coverage, and guided by the reference ger high-quality consensus sequence for 92% of the Asian indiv single-nucleotide polymorphisms (SNPs) inside this region, of analysis showed that SNP identification had high accuracy and assembly. We also carried out heterozygote phasing and hapl (Chinese and Japanese, respectively), sequence comparison w C. Venter), and structural variation identification. These variati sequence data and analyses demonstrate the potential usefuln genomics.

The completion of a highly refined, encyclopaedic human genome sequence^{1,2} was a major scientific development. Such reference sequences have accelerated human genetic analyses and contributed to advances in biomedical research. Given the growth of information on genetic risk factors, researchers are developing new tools and analyses for deciphering the genetic composition of a single person to refine medical intervention at a level tailored to the individual. The announcements that J. Craig Venter and James D. Watson have had their genomes sequenced^{3,4}, along with the announcement of the Personal Genome Project⁵, highlight the growth of personal genomics.

Using a massively parallel DNA sequencing method, we have generated the first diploid genome sequence of a Han Chinese individual, a representative of an East Asian population that accounts for nearly 30% of the human population. The consensus sequence of the donor, assembled as pseudo-chromosomes, serves as one of the first sequences available from a non-European population and adds to the small number of publicly available individual genome sequences. This sequence and the analyses herein provide an initial step towards attaining information on population and individual genetic variation, and, given the use and analysis of next-generation sequencing

6 November 2008 | www.nature.com/nature | £10

THE INTERNATIONAL WEEKLY JOURNAL OF SCIENCE

nature

- Individual genomes from Africa and China
- Acute myeloid leukaemia genome
- Designer nucleases for gene therapy
- Tracing gene flow across Europe

YOUR LIFE IN YOUR HANDS

Instructions for the personal genome age

NATUREJOBS
Mentor awards

¹Beijing Genomics Institute at Shenzhen, Shenzhen 518000, China. ²Genome Research Institute, Center for Genomics and Bioinformatics, Beijing 101300, China. ³Department of Biochemistry, College of Life Sciences, Peking University, Beijing 100871, China. ⁴Beijing Genomics Institute, Beijing Institute of Genomics of Chinese Academy of Sciences, Beijing 101300, China. ⁵The Graduate University of Chinese Academy of Sciences, Beijing 100062, China. ⁶The Wellcome Trust Sanger Institute, Wellcome Trust Genome Campus, Hinxton, Cambridge CB10 1SA, UK. ⁷Departments of Integrative Biology and Statistics, University of California, Berkeley, California 94720, USA. ⁸Department of Biological Sciences and Department of Medicine, University of Alberta, Edmonton AB, T6G 2E9, Canada. ⁹Institute of Human Genetics, University of Aarhus, Aarhus DK-8000, Denmark. ¹⁰These authors contributed equally to this work.

Maternal and Child Nutrition Reference Database

Maternal and Child Nutrition Reference Database

- **Population**

Children and women in 14 provinces, China

- **Information**

Incidence of low birth weight

Incidence of anaemia in reproductive aged women

Prevalence of Vitamin A deficiency in child

- **Self-evaluation**

Fetus weight

Anaemia in reproductive aged women

Vitamin A deficiency in child



国家科技基础条件平台
科学数据共享工程

国家医药卫生科学数据共享网 基础医学科学数据中心
National Medical Scientific Data Sharing Network Biologic Medicine Information Center

平台首页

数据库检索

在线分析工具

元数据查询

标准规范

资料中心

关于平台

登录/注册

快速导航

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低出生体重

育龄妇女贫血

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首页

低出生体重

育龄妇女贫血

儿童维生素A缺乏

健康自测

ITEM INTROS 项目背景介绍



低出生体重



育龄妇女贫血



儿童维生素A缺乏

1990年世界儿童问题首脑会议和国务院颁发的“九十年代中国儿童发展规划纲要”提出了一系列2000年战略目标，其中卫生保健目标占大部分。国务院妇女儿童工作委员会“九十年代中期中国儿童发展状况报告”表明卫生保健绝大部分目标已达到或超过中期目标的要求，中国妇女儿童的健康状况有了明显提高。但低出生体重儿发生率，育龄妇女缺铁性贫血患病率，儿童维生素A缺乏患病率三项指标尚缺乏全国性资料。在联合国儿童基金会的资助下，1998-2000年卫生部委托首都儿科研究所牵头，组织全国14个省、自治区、直辖市对以上反映妇女儿童营养状况的重要指标进行全国范围的调查研究。

低出生体重儿发生率是反应孕期工作质量、孕妇、胎儿及新生儿营养状况的重要指标，也是社会发展的重要指标。低出生体重儿死亡也是我国5岁以下儿童死亡的第三位死因，占我国5岁以下儿童死亡的10%以上。监测资料表明，由于感染性疾病的死亡近几年明显下降，而低出生体重儿死亡率下降不明显，低出生体重儿死亡占5岁以下儿童死亡构成比和重要性呈上升趋势。然而至今我国尚无确切的90年代全国低出生体重发生率资料，1995年全国年报资料低出生体重发生率2.02%，低于世界所有国家；国内有几次城市住院低出生体重调查发生率4-6%左右，不能反映全国情况；1992年国家统计局进行中国儿童基本情况调查，低出生体重发生率，广东14.3%，四川18.9%，甘肃26.3%，广西33.8%，尤其海南高达53%，可能大大超过实际情况。因此需要获得准确、可靠的全国低出生体重发生率资料。

育龄妇女缺铁性贫血和儿童维生素A缺乏患病率是分别反映妇女和儿童营养状况的重要指标。妊娠妇女贫血不仅影响母亲，也影响胎儿的健康成长，而儿童维生素A缺乏可导致儿童呼吸道感染和腹泻发病率、死亡率的增加，此外也是导致儿童失明的重要原因，但以上患病情况国内均只有局部地区的资料，也需要进行全国性专门调查。

本数据库的数据资料可作为实施《中国儿童发展纲要（2001-2010年）》和《中国妇女发展纲要（2001-2010年）》的基础数据。

THE CRUCIAL QUESTIONS ABOUT THE INTERNATIONAL DATA SHARING FOR BIOMEDICINE

- Standard for data collection and management between US & China
- Standard for the construction of the data sharing platform
- Strategies and mechanism of the data sharing system
- A professional team fully supported by the government is necessary for the program.

Challenge

- ★ **Consciousness on sharing among researchers**
- ★ **Requirement for specialists on cross-sciences (biomedical and computer science)**
- ★ **Financial support on maintaining the network for a long term development**

Plan for the next step

- ★ Continuing to search new data resource
- ★ To improve performance of technique platform
- ★ To develop the conjunction among datasets
- ★ International communication & cooperation

.....

Next steps ?

- **It may require close collaboration on point-to-point between us to make the co-data work effectively.**
- **It is needed to discuss how to design and implement science data transfers system and present a framework of data transfers linking.**
- **Complete the understanding of network performance & transfer rates**
- **Need to identify user requirements & set the routing to allow use of the co-data links.**
- **It is necessary to set up the linking mirrors in two sites for widening the user base.**
- **Considering to provide extensive international connectivity to other world regions**

Work team



THANK YOU





Introduction and Principles of caBIG[®]

John Speakman
Associate Director, Clinical Sciences
Center for Biomedical Informatics and Information Technology
National Cancer Institute

*Workshop on Biomedical Data Sharing in the U.S. and China:
Opportunities for Collaboration through
the National Cancer Institute Cancer Bioinformatics Grid[®]*

Beijing, Peoples Republic of China

June 22, 2010

The National Cancer Institute (NCI)

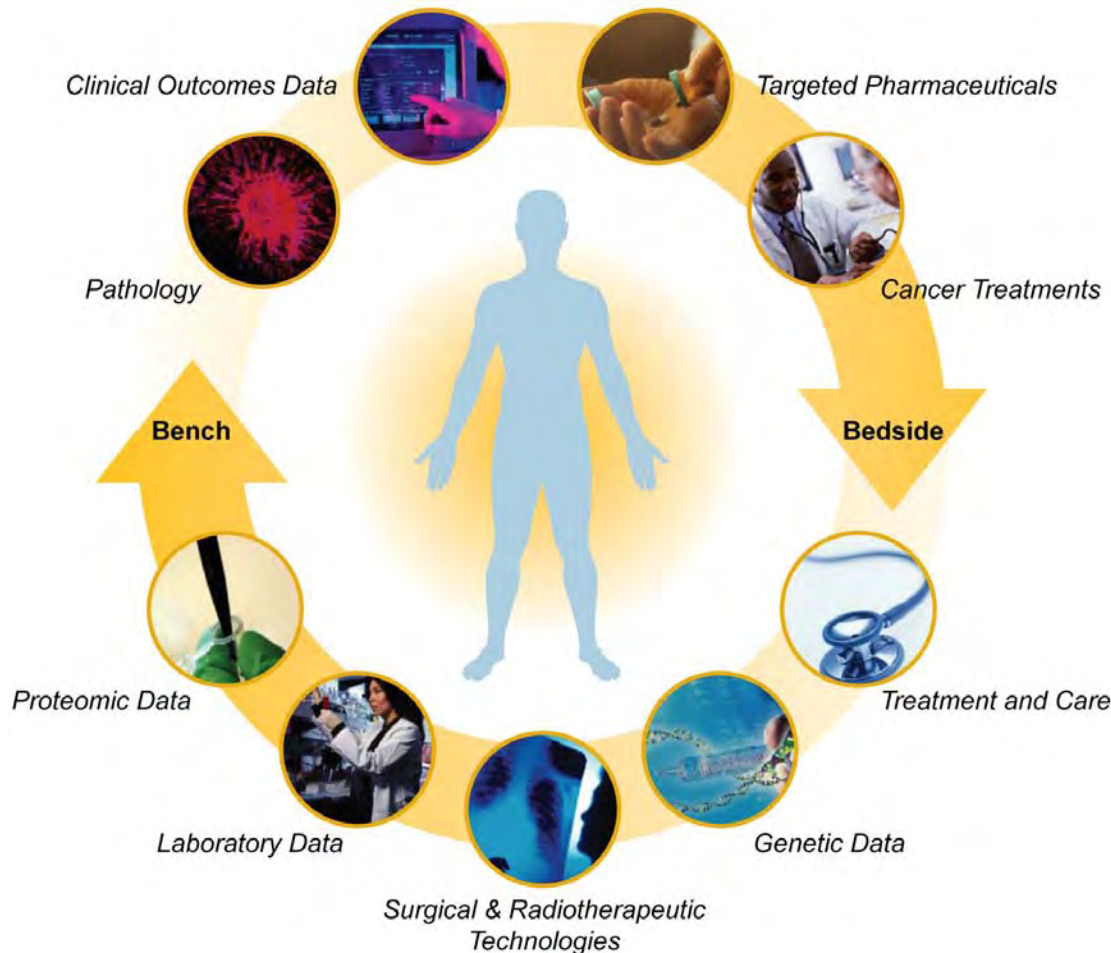
- U.S. Federal Government's principal agency for cancer research and training
- Part of the National Institutes of Health (NIH), one of 11 agencies that compose the Department of Health and Human Services (HHS)
- Established under National Cancer Institute Act of 1937, scope broadened by National Cancer Act of 1971
- Coordinates National Cancer Program, including:
 - NCI-designated Cancer Centers
 - Cooperative Groups
 - National Community Cancer Centers Program



Defining Moment in Biomedicine...

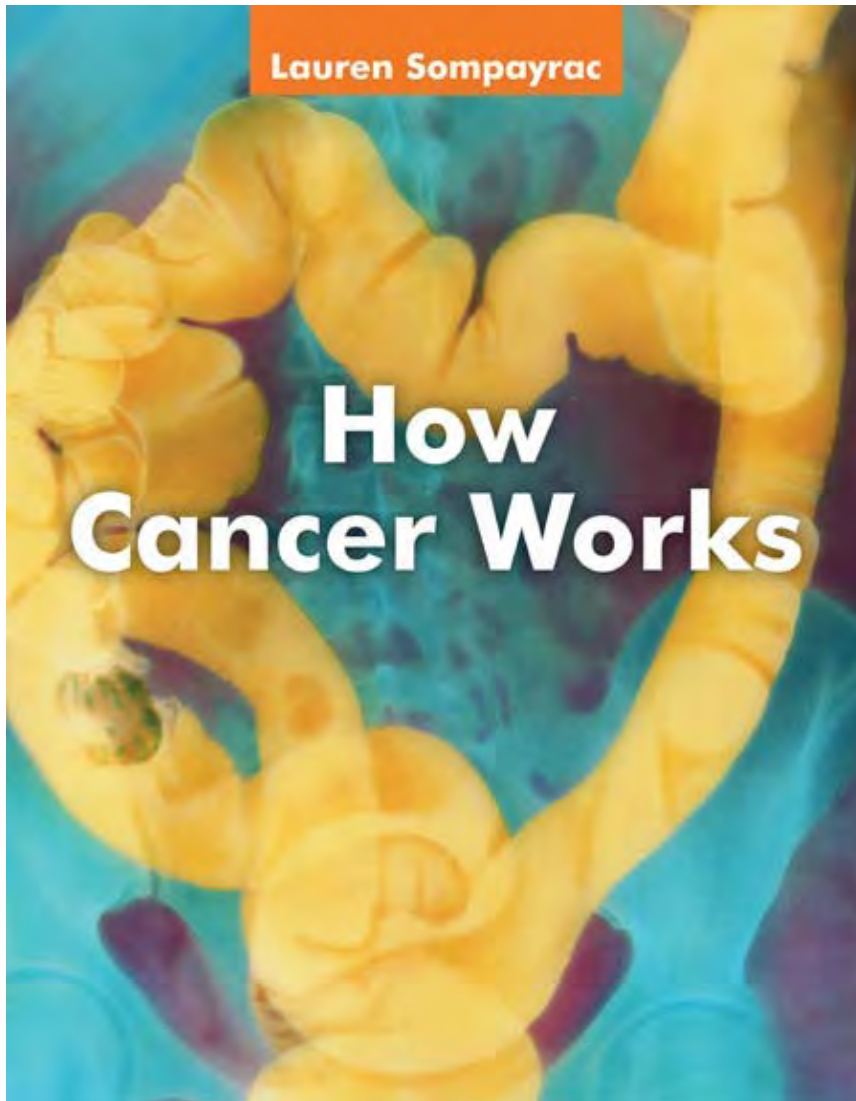
- **Several capabilities, needs and trends are converging:**
 - Vast and growing amount of molecular information
 - Ability to aggregate and process clinical information on an unprecedented scale
 - \$44+ Billion U.S. investment in Electronic Health Records
 - Unsustainable cost of new drug development

21st Century Biomedicine



- **Personalized, Predictive, Preemptive, Participatory.....**
- **Unifies** discovery, clinical research, and clinical care (bench-bedside-bench) into a seamless continuum
- **Results** in improved clinical outcomes
- **Accelerates** the time from discovery to patient benefit
- **Enables** a health care system, not a disparate “sector”
- **Empowers** consumers in managing their health over a lifetime

Still Fighting a War on Cancer



- We know “how cancer works”
- BUT:
- Estimated US cancer deaths 2009: 562,340
(*American Cancer Society*)
- Estimated new US cancer cases 2009: 1,479,350
(*American Cancer Society*)
- Cost of cancer deaths: \$960.7 billion in 2000, estimated \$1,472.5 billion in 2020 (*Journal of the National Cancer Institute*, Dec. 9, 2008)

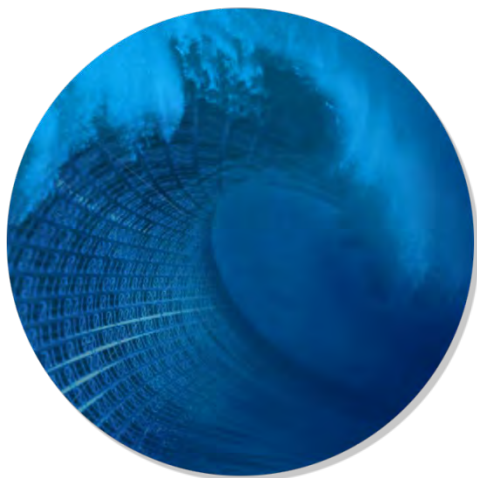
Information and Community Fragmentation blocks the New Paradigm



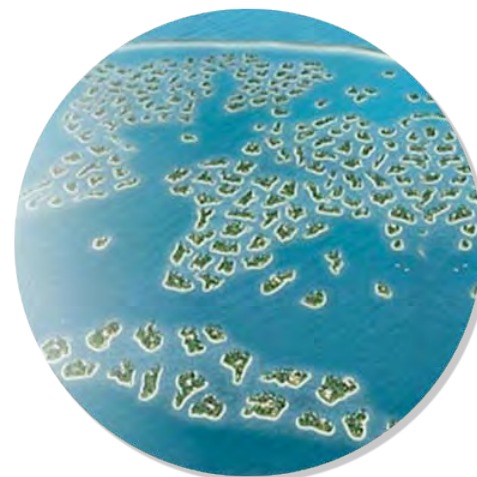
Biomedicine is *Decades* Behind the “Knowledge Economy” Curve

- Translational research and personalized medicine require integration of multiple modalities and dimensions of data (clinical care / clinical trials / pathology / imaging / gene expression / population data, etc.)
- This integration is currently achieved by custom-built point solutions, if at all
- As a result, the data is often locked away in incompatible formats and systems
- Research studies are artisanal, handcrafted from one-of-a-kind components; clinical trials take too long to initiate, too long to accrue patients and too long to report outcomes
- Access to, and maturity of, informatics tools within the research community is inconsistent

Obstacles to Integration



**Tsunami of Genomic
and Clinical Data**



Islands of Information



Standard Language



IT Systems Do Not Interoperate

The Cancer Biomedical Informatics Grid (caBIG®)

caBIG® Vision:

A virtual web of interconnected data, individuals, and organizations that redefines how research is conducted, care is provided, and patients/participants interact with the biomedical enterprise.

caBIG® Mission:

- **Connect** the cancer research community through a shareable, interoperable infrastructure
- **Deploy and extend** standard rules and a common language to more easily share information
- **Build** or adapt tools for collecting, analyzing, integrating and disseminating information associated with cancer research and care

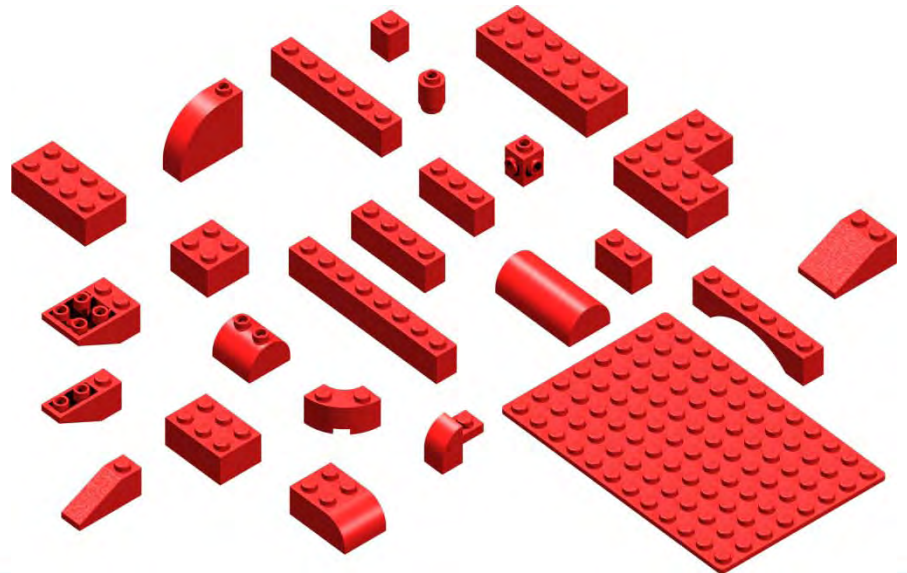
caBIG[®] Core Principles

- Open Access
 - caBIG[®] is open to all, enabling wide-spread access to tools, data, and infrastructure
- Open Development
 - Planning, testing, validation, and deployment of caBIG[®] tools and infrastructure are open to the entire research community
- Open Source
 - The underlying software code of caBIG[®] tools is available for use and modification
- Federation
 - Resources can be controlled locally, or integrated across multiple sites

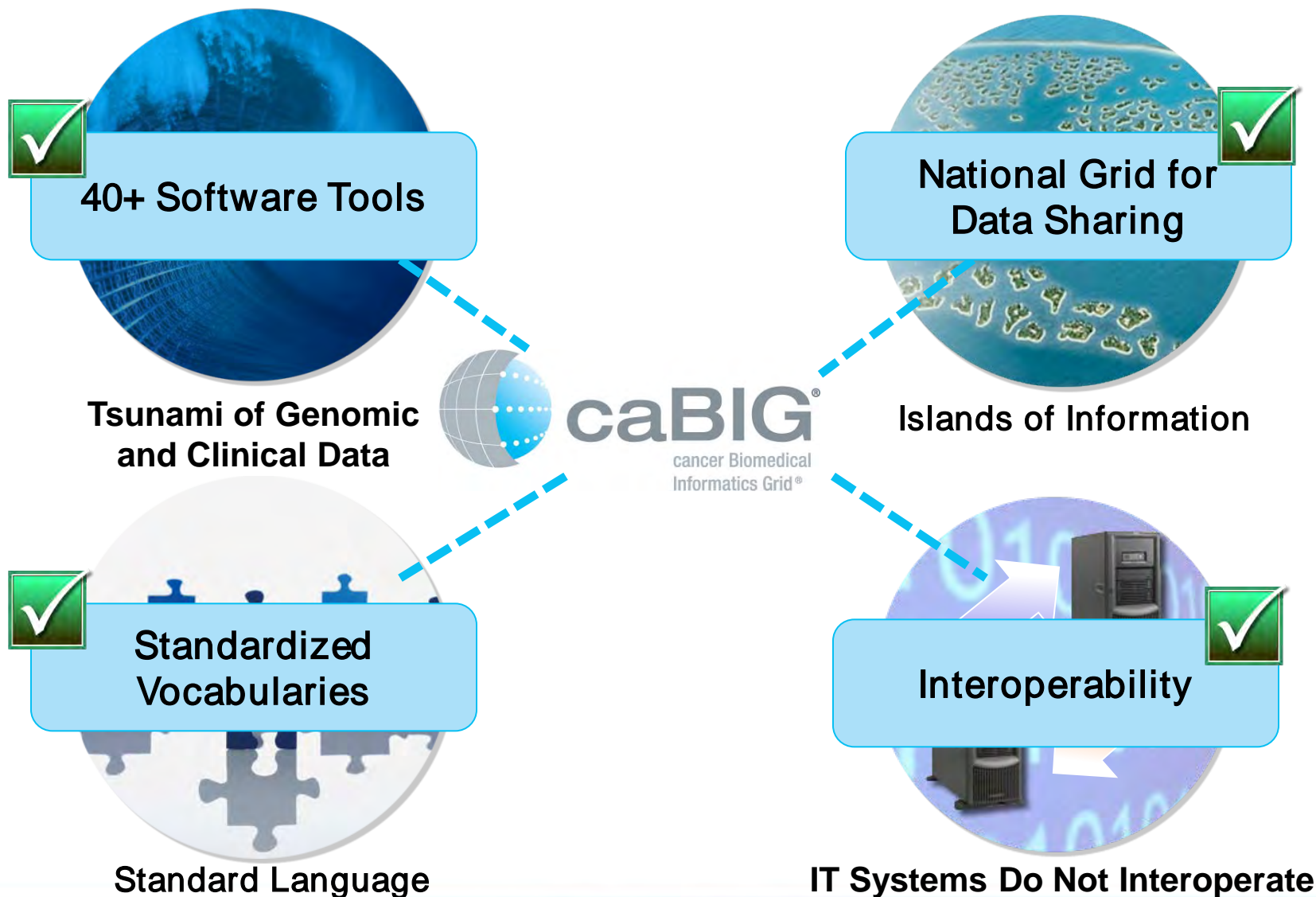


Modularity

- Boundaries of clinical research are blurring
- Need to interface rapidly with new data sources and destinations, and have them interoperating right away – if we take too long, the data source/destination becomes obsolete
- *Anyone* can build a module that plugs in ...if they build to our open standards

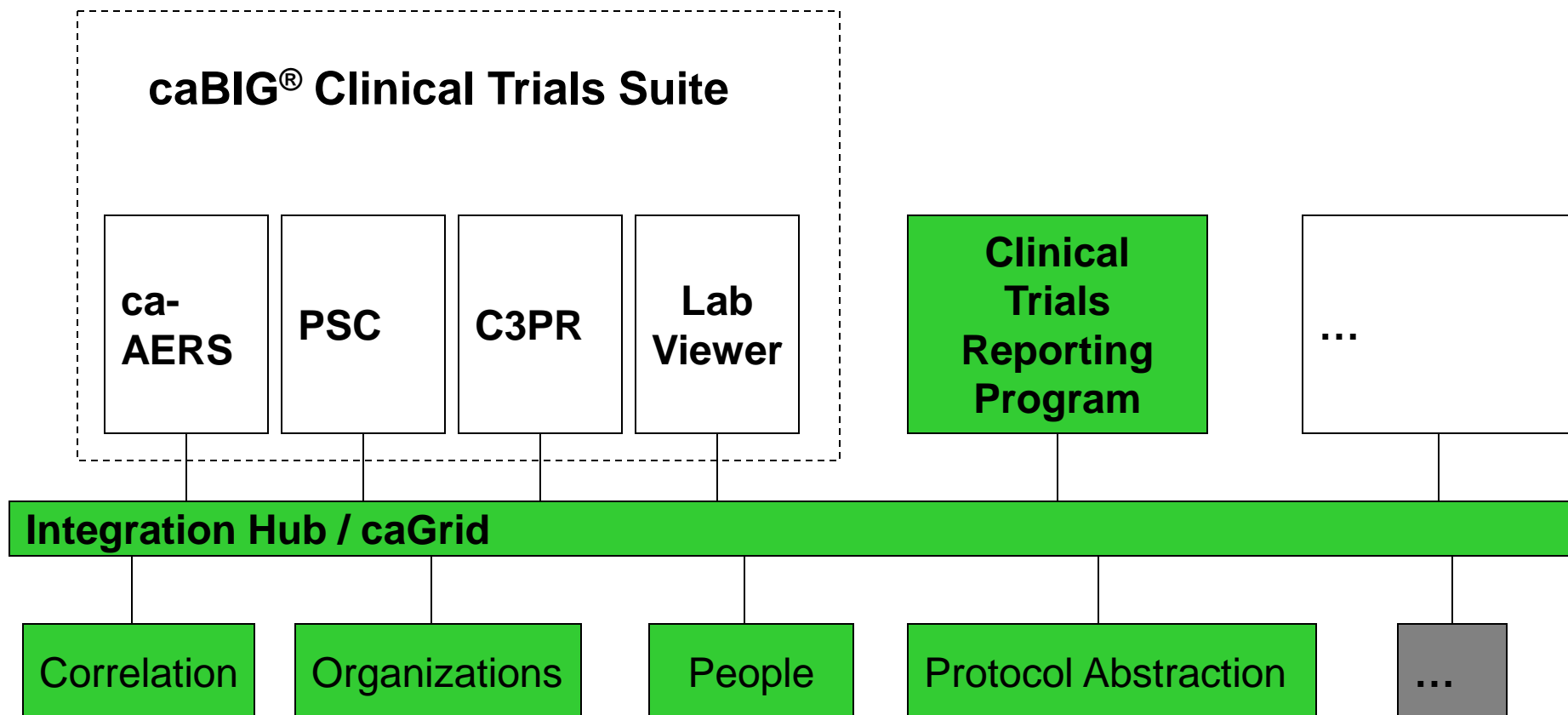


caBIG[®] Overcomes the Obstacles to Integration



A Semantic Services Oriented Architecture

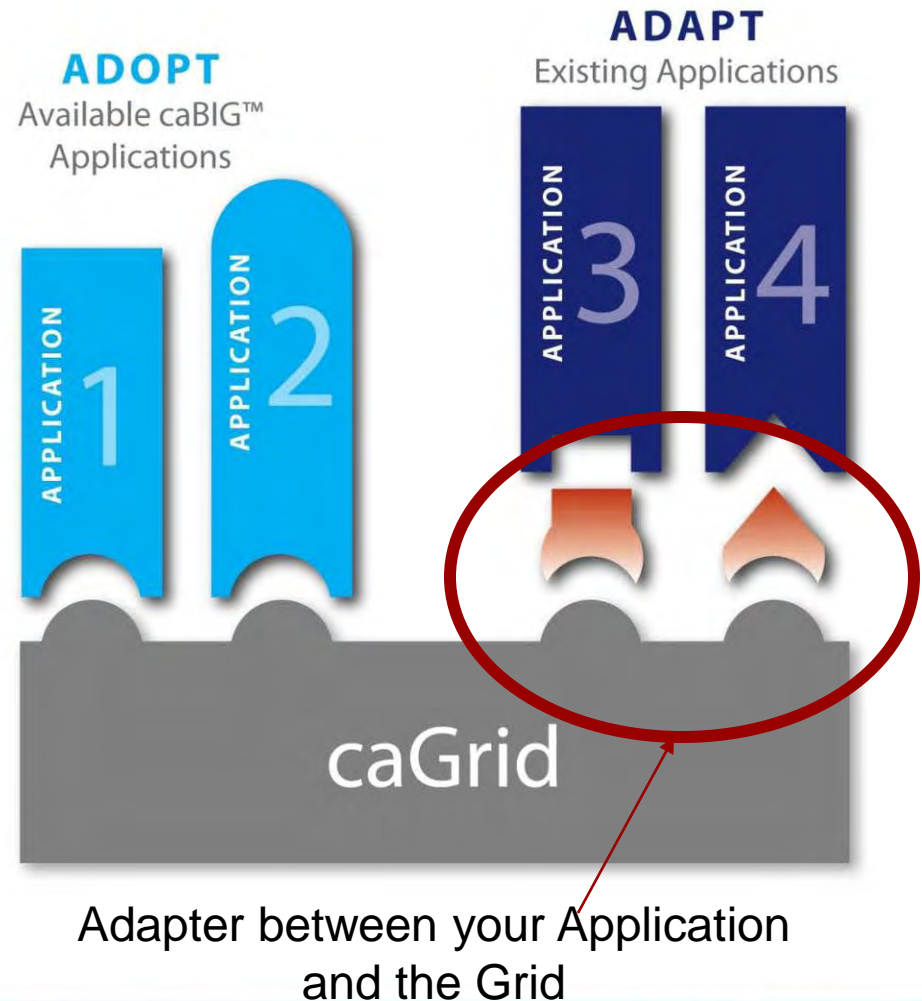
- Vendors, Cancer Centers also exploring service integration



How do you use it?

Adopting involves installing software applications already made to caBIG® standards, integrating them into your workflow, and connecting to caGrid.

Adapting involves modifying your existing software applications to be caBIG® compatible, and then connecting to caGrid.



Clinical Participant Registry (C3PR)

- Manages clinical trial subject data across multiple clinical trials
- Supports large-scale, geographically dispersed studies
- Provides enrollment statistics and a repository for participant information across studies, sites, systems, and organizations
- Role-based access by study personnel

C3PR
CANCER CENTRAL CLINICAL PARTICIPANT REGISTRY

National Cancer Institute Clinical Research Branch

Welcome CCTS Admin | Admin Help | Log out
Dashboard | Change skin

Registration Studies Person & Organization Administration Reports

Frequently Used Shortcuts

- Search Participant
- Manage Study
- Manage Registration

Notifications [My Inbox](#)

You don't have any notifications.

C3PR Development Notes

- C3PR Wiki
- C3PR User Guide

Build Number: c3pr v. 2.8

Incomplete Registrations - Most Recent

No incomplete registrations found.

Pending Studies - Most Recent

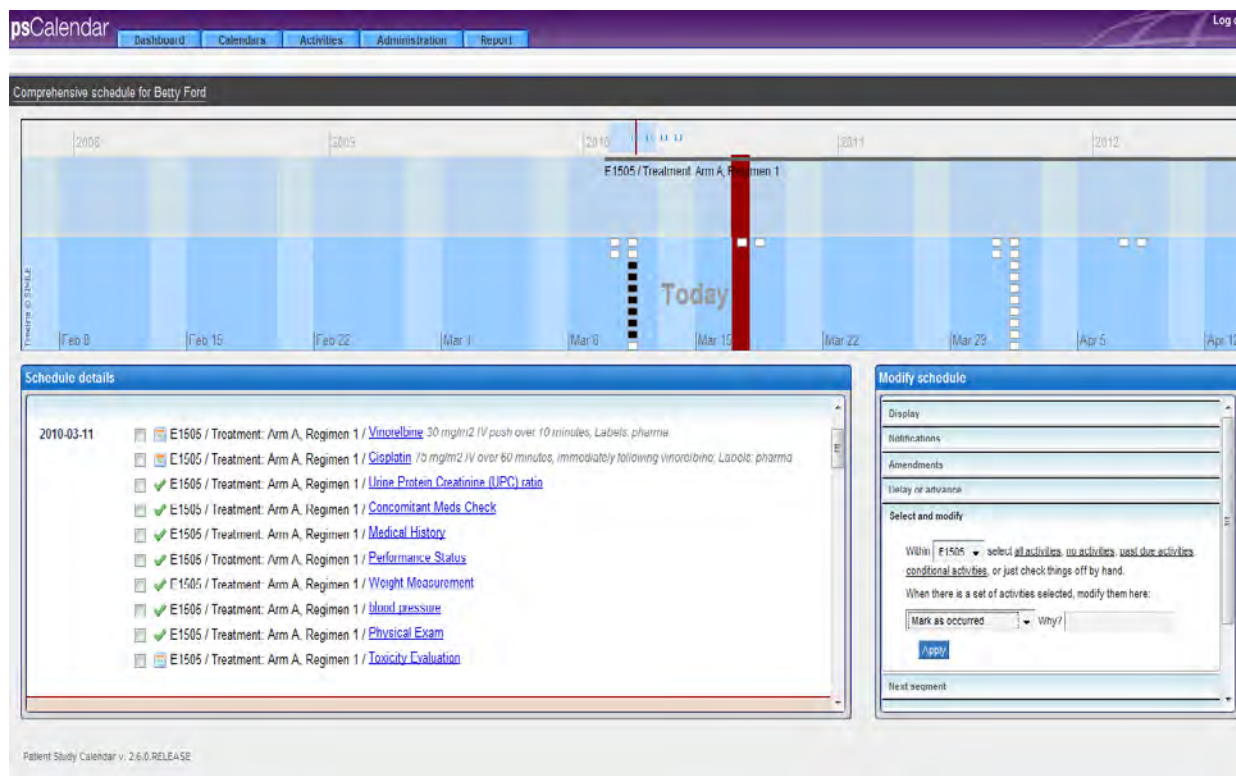
Short title	Primary identifier	Coordinating center	Phase
Test Study 3	Study3	National Cancer Institute	Phase I/II Trial

Most Active Studies

Short title	Primary identifier	Coordinating center	Accrual within last week
E1505	E1505	Eastern Cooperative Oncology Group	0
Test Study 2	TSt-2	National Cancer Institute	0
Test Study 1	Test-Study1	National Cancer Institute	0

Patient Study Calendar (PSC)

- Create, edit, distribute study calendar templates, generate and view prospective calendars of patient activities, track activities as they occur, and manage study subject calendars
- Share calendar with subject either online or via calendar file
- Accommodates interventional, epidemiological / observational studies



Adverse Event Reporting System (caAERS)

- Used to collect, process and report adverse events
- Supports regulatory compliance and allows local collection, management, and querying of adverse event data, whether routine or serious
- Report in standard formats required by regulatory authorities
- Automated reporting to sponsor and (soon) FDA systems

caAERS
CANCER ADVERSE EVENT REPORTING SYSTEM

Adverse Events | Studies | Subjects | Rules | Administration | Advanced Search

Report Adverse Events | Manage Reports | Routing and Review

Study (E1505) A Phase III Randomized Trial of Adjuvant Chemotherapy With or Without Bevacizumab for Patients With Completely Resected Stage IB (> 4 cm) - IIIA Non-Small Cell Lung Cancer (NSCLC)

Subject (10-02-04-1) Betty Ford

Instructions The table below summarizes reporting screens.

View this person's schedule in the [study](#)

Course #

Cycle #: 1; Start Date: 03/10/10

Labs

Lab	Date	Value	Unit	Status
RBC_SERUM	2009-03-04	3.9	Million/microL	✗
BILIRUBIN_TOTAL	2009-03-04	2.5	mg/dL	✗
LYMPHOCYTES_SERUM	2009-03-04	49.0	%	✗
SGOT_AST	2009-03-04	256.0	U/L	✗
WBC_SERUM	2009-03-04	12.7	K/UL	✗
SGPT_ALT	2009-03-04	166.0	U/L	✗

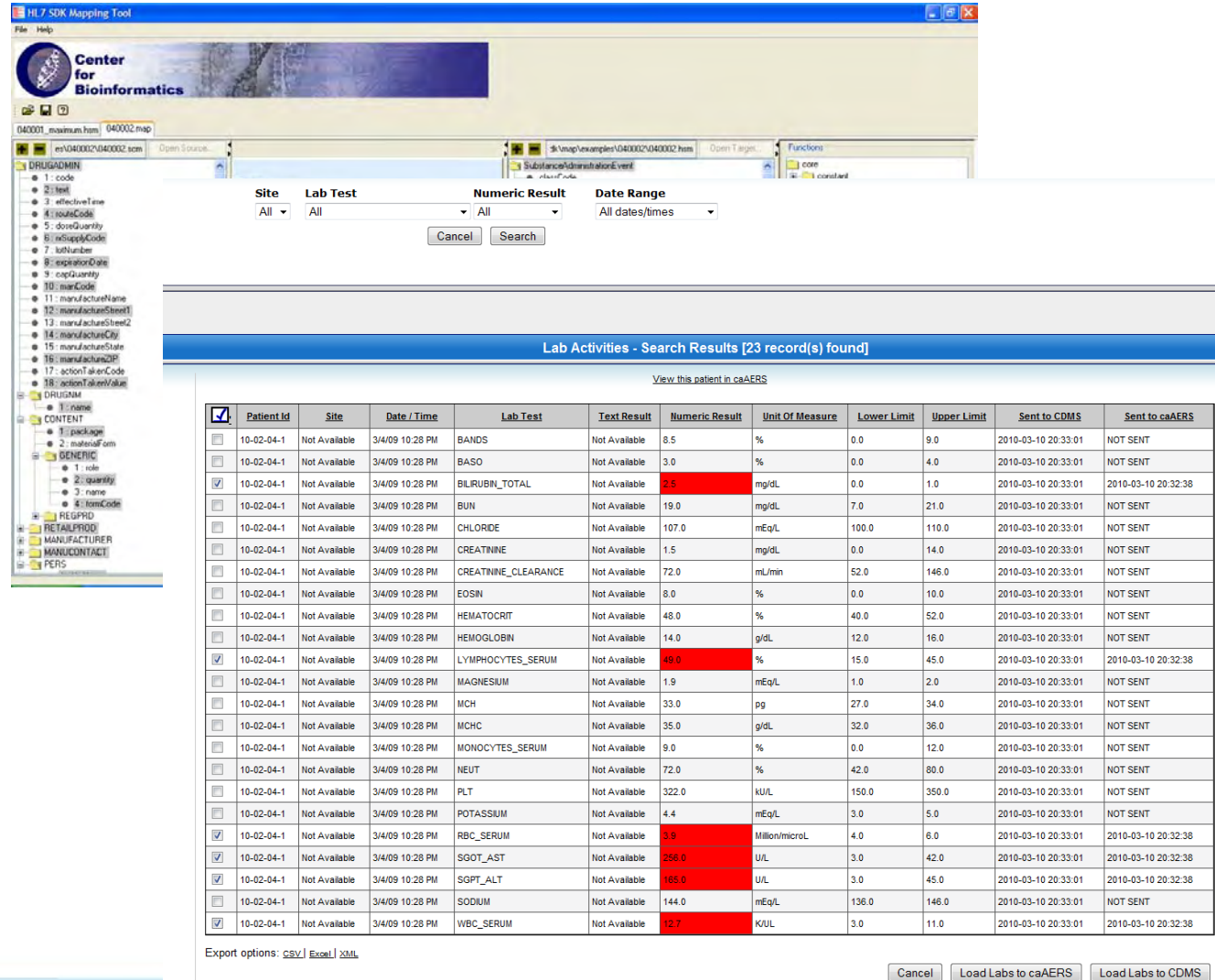
Comments / Alerts

Report Type	Amendment #	# of AEs	Data Entry Status	Report Submission Status	Options
NCI SAE Report - for QA testing only	0	3	In-progress	Due in 3 days	Please select ▼

AE Term	Grade	AE Start Date	Requires Expedited Reporting?
Vomiting	2	03/10/2010	Yes
Pain - Head/headache	1	03/10/2010	No
Nausea	1	03/10/2010	No

caBIG® Integration Hub and Lab Viewer

- Configurable Hub for exchanging clinical trial information between applications and systems
- Can map and transfer laboratory data from non-standard clinical care systems into a standard format (suitable for receipt by clinical trials databases)



Lab Activities - Search Results [23 record(s) found]

[View this patient in caAERS](#)

<input checked="" type="checkbox"/>	Patient Id	Site	Date / Time	Lab Test	Text Result	Numeric Result	Unit Of Measure	Lower Limit	Upper Limit	Sent to CDMS	Sent to caAERS
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	BANDS	Not Available	8.5	%	0.0	9.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	BASO	Not Available	3.0	%	0.0	4.0	2010-03-10 20:33:01	NOT SENT
<input checked="" type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	BILIRUBIN_TOTAL	Not Available	2.5	mg/dL	0.0	1.0	2010-03-10 20:33:01	2010-03-10 20:32:38
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	BUN	Not Available	19.0	mg/dL	7.0	21.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	CHLORIDE	Not Available	107.0	mEq/L	100.0	110.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	CREATININE	Not Available	1.5	mg/dL	0.0	14.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	CREATININE_CLEARANCE	Not Available	72.0	mL/min	52.0	146.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	EOSIN	Not Available	8.0	%	0.0	10.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	HEMATOCRIT	Not Available	48.0	%	40.0	52.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	HEMOGLOBIN	Not Available	14.0	g/dL	12.0	16.0	2010-03-10 20:33:01	NOT SENT
<input checked="" type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	LYMPHOCYTES_SERUM	Not Available	49.0	%	15.0	45.0	2010-03-10 20:33:01	2010-03-10 20:32:38
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	MAGNESIUM	Not Available	1.9	mEq/L	1.0	2.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	MCH	Not Available	33.0	pg	27.0	34.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	MCHC	Not Available	35.0	g/dL	32.0	36.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	MONOCYTES_SERUM	Not Available	9.0	%	0.0	12.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	NEUT	Not Available	72.0	%	42.0	80.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	PLT	Not Available	322.0	KU/L	150.0	350.0	2010-03-10 20:33:01	NOT SENT
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	POTASSIUM	Not Available	4.4	mEq/L	3.0	5.0	2010-03-10 20:33:01	NOT SENT
<input checked="" type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	RBC_SERUM	Not Available	5.9	Million/microL	4.0	6.0	2010-03-10 20:33:01	2010-03-10 20:32:38
<input checked="" type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	SGOT_AST	Not Available	256.0	U/L	3.0	42.0	2010-03-10 20:33:01	2010-03-10 20:32:38
<input checked="" type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	SGPT_ALT	Not Available	165.0	U/L	3.0	45.0	2010-03-10 20:33:01	2010-03-10 20:32:38
<input type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	SODIUM	Not Available	144.0	mEq/L	136.0	146.0	2010-03-10 20:33:01	NOT SENT
<input checked="" type="checkbox"/>	10-02-04-1	Not Available	3/4/09 10:28 PM	WBC_SERUM	Not Available	12.7	KU/L	3.0	11.0	2010-03-10 20:33:01	2010-03-10 20:32:38

Export options: [CSV](#) | [Excel](#) | [XML](#)

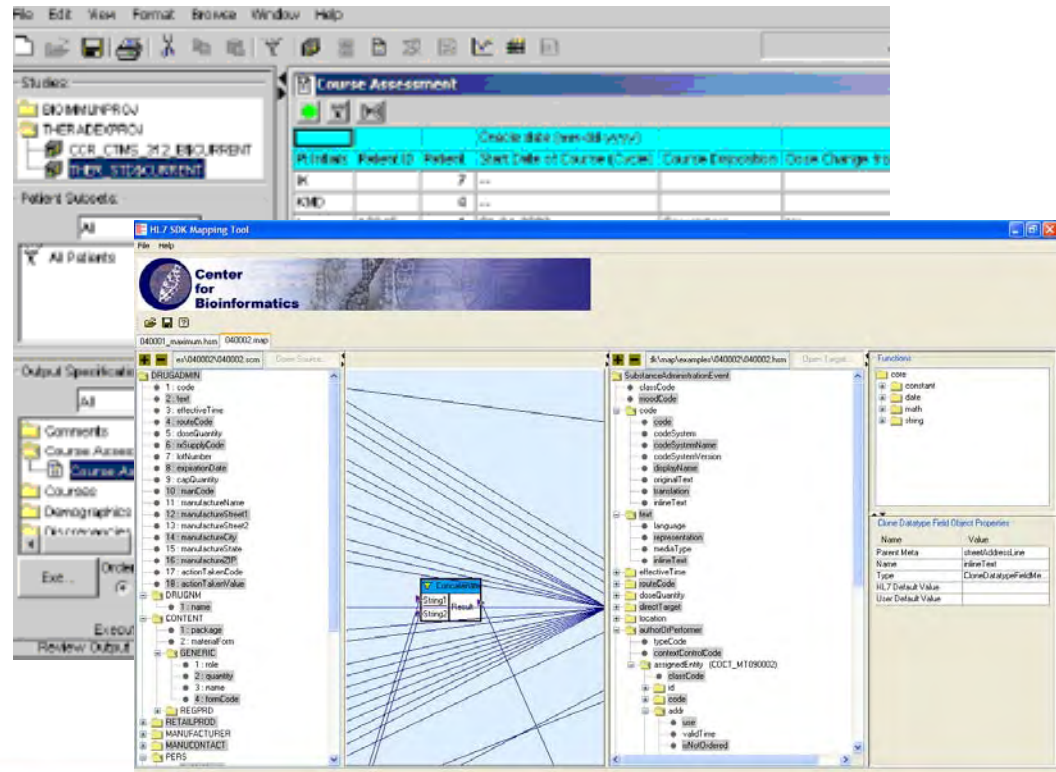
[Cancel](#) [Load Labs to caAERS](#) [Load Labs to CDMS](#)

caBIG® Clinical Connector

Clinical Data Management System (CDMS/EDC) Integration

The Clinical Connector enables the exchange of data between the caBIG® Clinical Trials Suite and any caBIG® compatible Clinical Data Management System (CDMS)

- Supports the Cancer Central Clinical Database (C3D) and other conforming CDMS products
- Reduces duplicate data entry and streamlines clinical trials workflow



Integration of caBIG® Clinical Trials Suite

caBIG® Central Clinical Participant Registry (C3PR)

The screenshot displays the C3PR interface with a 'Summary' tab on the left and 'Enrollment Details' on the right. The summary includes fields for Full Name, Subject ID, Gender, Race, Date of Birth, and Current Epoch. The enrollment details section shows information about the study, site, and patient's current status.

Eligibility is verified and patient is registered to a study

Patient Study Calendar (PSC)

The screenshot shows the PSC interface for a specific patient, displaying a calendar view of study visits and events. It includes fields for patient ID, study ID, and a list of scheduled visits with dates and times.

Tracks the patient schedule throughout the study

Lab Viewer

The screenshot displays the Lab Viewer interface, showing a table of lab results. The table has columns for Lab ID, Lab Name, Result, and Status. Red highlights are visible in the 'Result' column for several rows.

Identifies labs, loads them into the CDMS and AE system

**caBIG®
Integration
Hub**

caBIG® Adverse Event Reporting System (caAERS)

The screenshot shows the caAERS interface, displaying a list of adverse events. It includes fields for Subject ID, Study ID, and a table of adverse events with columns for Event ID, Date, and Description.

Identifies and tracks adverse events and any associated schedule changes

Clinical Data Management System

The screenshot displays the Clinical Data Management System interface, showing a table of clinical data. The table has columns for Patient ID, Study ID, and a list of clinical data points with corresponding values.

Clinical data is captured

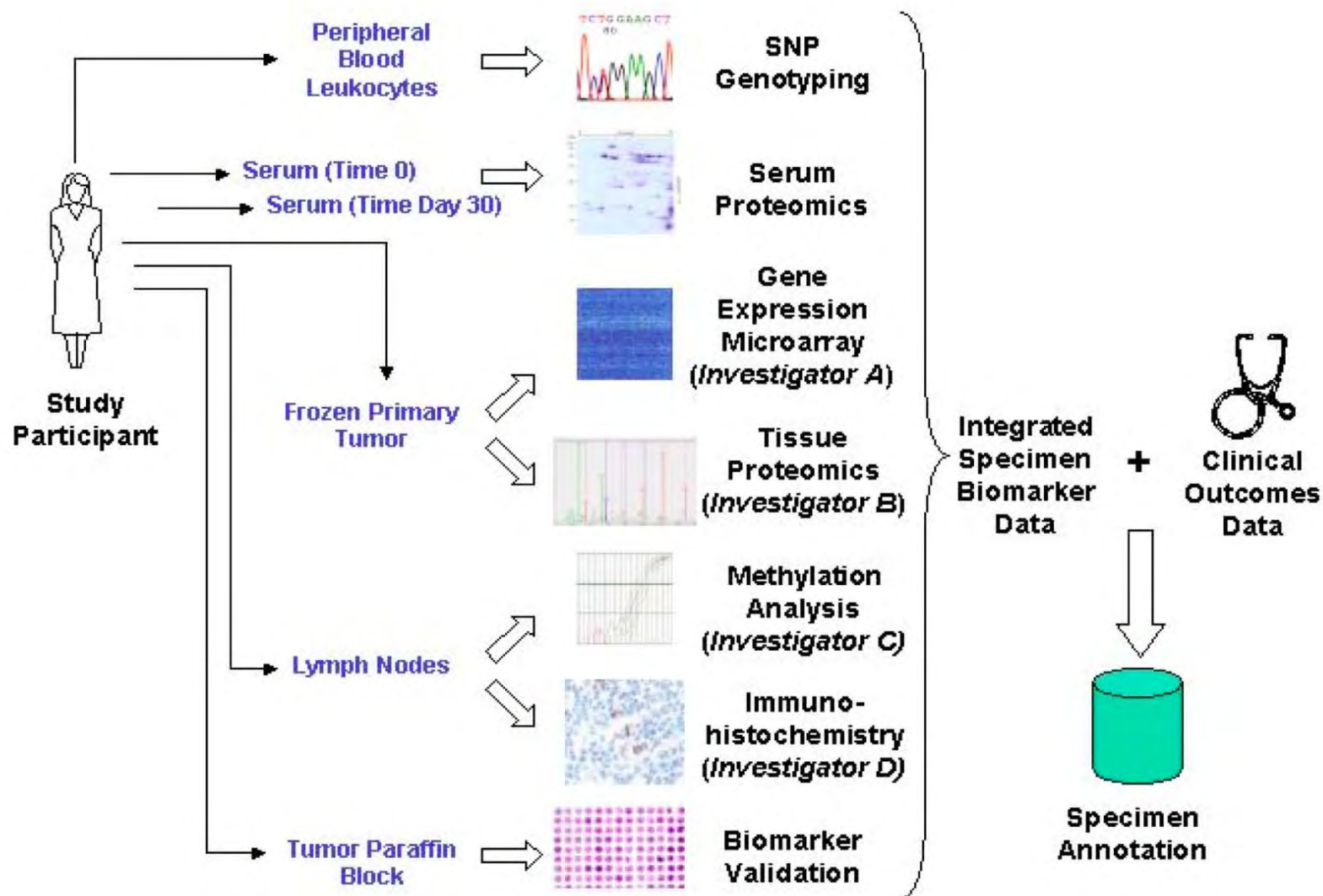
(CTODS)

**Clinical Trial
Object Database
System**



*Patient visits the
Physician*

Biospecimen Banking: caTissue



Biospecimen Banking: caTissue

Web-based application for tracking the acquisition, storage and distribution of biospecimens

- Specimen history
- Basic annotation
- Simple and Advanced Query
- Integration with existing systems - via API
- Role based security
- Temporal Queries (e.g., querying by patient age, time between events)

The screenshot displays the caTissue web application interface. On the left is a hierarchical tree view of the biospecimen storage structure, including nodes like 'Persistent test lab', 'warehouse', 'Crossroads Laboratories', and various 'MC Box' and 'MC-80 Freezer' units. The main area on the right features a filter table and a grid of specimen containers.

Collection Protocol		Specimen Class		
	All	Molecular	Fluid	Cell
		Tissue		

This selection depicts the selected restrictions on the container

	Columns →	1	2	3	4
Rows ↓	1	Specimen : Tissue D1_11235712	Unused	Unused	Unused
2		Unused	Unused	Unused	Unused
3		Unused	Unused	Unused	Unused
4		Unused	Unused	Unused	Unused

This selection depicts the dimensions and contents of the container.



Home

About caBIG™

Events & Calendar

Community News

Policies, Guidelines & Whitepapers

Compatibility & Certification

Getting Connected with caBIG™

Tools, Infrastructure, Data
Resources

Library

Training Portal

Workspaces & SIGs

Domain Workspaces

Clinical Trials Management
Systems

Integrative Cancer Research

In Vivo Imaging

Tissue Banks and Pathology
Tools

Cross Cutting Workspaces

Architecture

Vocabularies & Common Data
Elements

Strategic Level Workspaces

Data Sharing & Intellectual
Capital

Documentation & Training

Strategic Planning

Management Systems

Templates & Forms

[home](#) » [workspaces](#) » [tissue banks and pathology tools](#) » shared biospecimen data directory

Shared Biospecimen Data Directory



This directory contains a list of known sites that share biospecimen data using caTissue or some other caBIG™ compatible product. Sites can be accessed by following the provided links, though in some cases access is restricted to known IP addresses. Each site offers additional summary data and the ability to request a username/password in order to conduct a detailed search for biospecimen data.

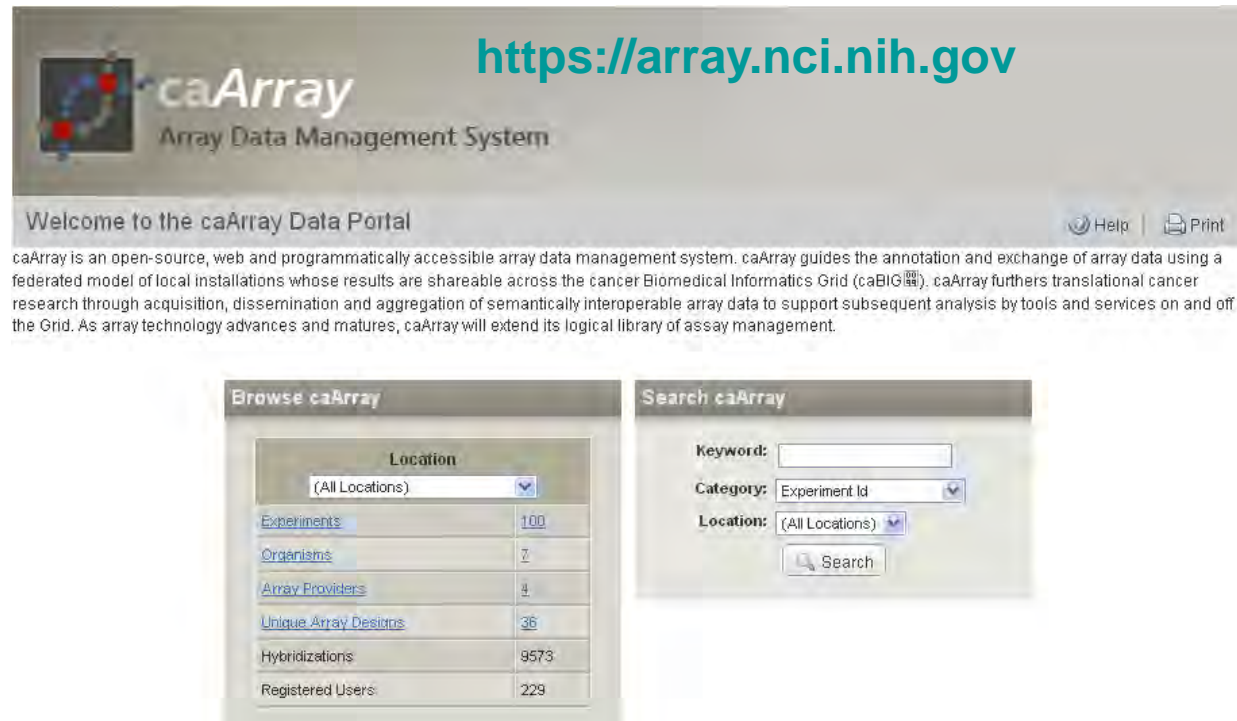
Site Name	Version	@biobank Use
Indiana University	caTissue Core 1.2.0.1	Production
Louisiana Cancer Research Consortium	caTissue Core 1.2.0.1	Production
Thomas Jefferson University	caTissue Core 1.2.0.1	Production
University of Pennsylvania	caTissue Core 1.2.0.1	Production
University of Pittsburgh	caTissue Core 1.2.0.1	Production
Washington University in St. Louis	?	?
Yale University	?	?
Baylor College of Medicine	caTissue Suite 1.0 (RC2)	Production
Dana Farber Cancer Institute	?	?
Fred Hutchinson Cancer Research Center	caTissue Suite 1.0 (RC1)	Testing
Johns Hopkins	caTissue Suite 1.0 (RC2)	Testing
Mayo Clinic	?	?
MD Anderson	?	?
Memorial Sloan Kettering Cancer Center	caTissue Suite 1.0 (RC2)	Testing
Northwestern University	caTissue Suite 1.0 (RC2)	Testing
University of California - San Francisco	caTissue Core 1.2.0.1	Testing
University of California - Los Angeles	caTissue Core 1.2.0.1	Testing
University of Michigan	>caTissue Core 1.2.0.1	Production

To publish or update your institution's information, please contact Miguel Buddle (buddle_miguel@bah.com).

last modified 05-13-2008 09:42 PM

Array Data Management: caArray

- Store array data
- Parse popular expression/SNP array formats (Affymetrix, Illumina and GenePix) - store native files for other providers
- MAGE-TAB compatible import
- MIAME-compatible annotation
- Browse and Search



<https://array.nci.nih.gov>

caArray
Array Data Management System

Welcome to the caArray Data Portal

caArray is an open-source, web and programmatically accessible array data management system. caArray guides the annotation and exchange of array data using a federated model of local installations whose results are shareable across the cancer Biomedical Informatics Grid (caBIG®). caArray furthers translational cancer research through acquisition, dissemination and aggregation of semantically interoperable array data to support subsequent analysis by tools and services on and off the Grid. As array technology advances and matures, caArray will extend its logical library of assay management.

Browse caArray

Location	
(All Locations)	
Experiments	100
Organisms	7
Array Providers	4
Unique Array Designs	36
Hybridizations	9573
Registered Users	229

Search caArray

Keyword:

Category: Experiment Id

Location: (All Locations)

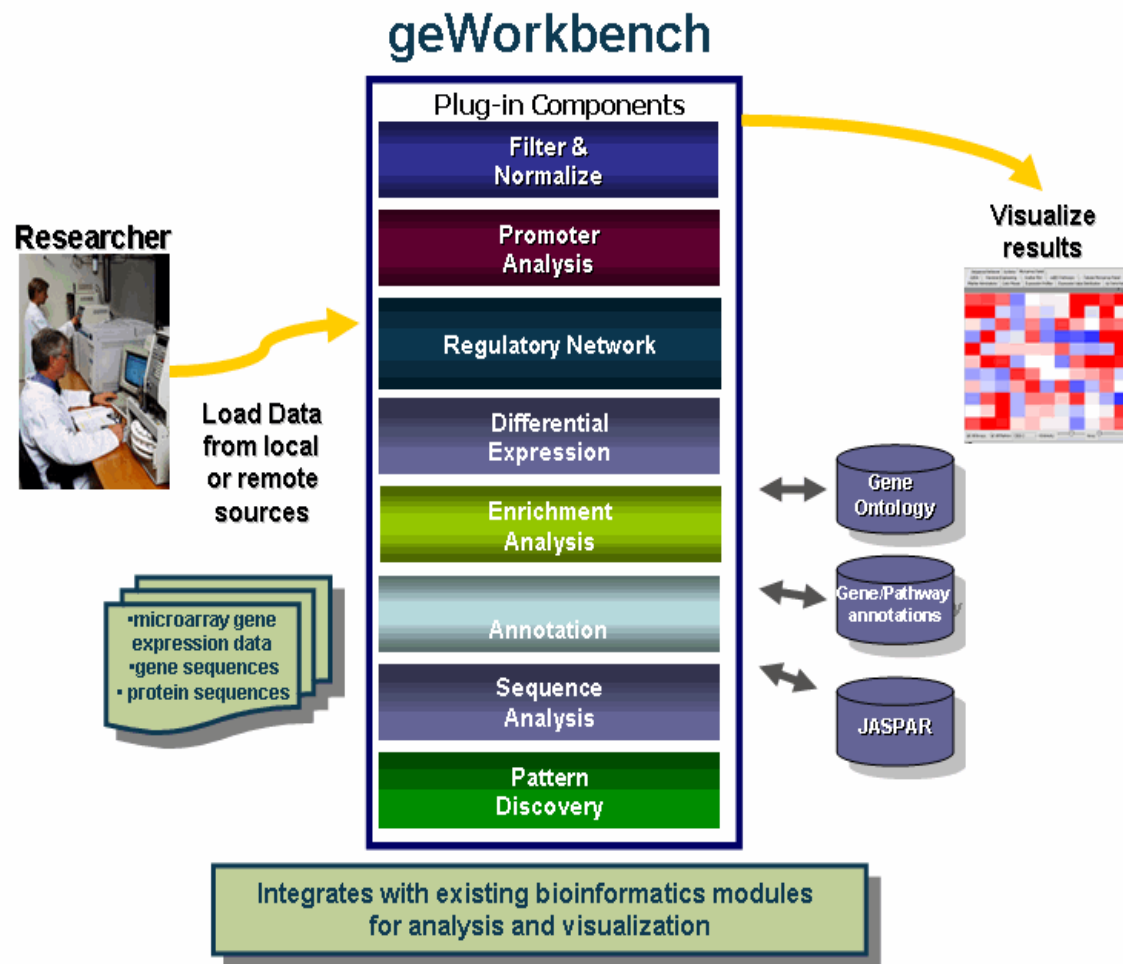
NBIA: *in vivo* Imaging Repository

- Searchable, web-based repository of *in vivo* images
- Popular image formats supported including CT, MRI, and digital x-rays (DICOM standard)
- Also contains annotation files (PDF, image markup) and annotation data provided by curators

The screenshot shows the NCIA website with a red header bar containing the National Cancer Institute logo and 'U.S. National'. Below the header, the 'NCIA National Cancer Imaging Archive' title is prominent. A navigation bar includes links for TOOLS, HOME, SEARCH IMAGES, MANAGE DATA BASKET, and HELP. A left sidebar lists 'DICOM Image Viewers', 'QUICK LINKS' (NCIA NEWS, NCIA USER'S GUIDE, NCI HOME, NCICB HOME), and logos for caBIG, Cancer Imaging Program, Center for Bioinformatics, RSNA, and NIBIB. The main content area features a banner with medical images and the text 'an image repository tool'. Below the banner, a 'WELCOME TO NATIONAL CANCER IMAGING ARCHIVE' section contains a 'New!' announcement about web-based image visualization and markup, followed by a welcome message and a list of supported tools: Lesion detection and classification, Accelerated diagnostic imaging decision, and Quantitative imaging assessment of drug response. It also states that NCIA provides access to imaging resources to improve cancer research and practice by increasing efficiency and leveraging imaging for objective assessment. On the right, a 'USER LOGIN' section includes fields for EMAIL (jaffec1@mail.nih.g) and PASSWORD, with 'Login' and 'Register' buttons. Below that is a 'NEW USER REGISTRATION' section with a message about completing a one-time registration form.

Molecular Profiling Platform: geWorkbench

Comprehensive
and extensible
collection of
tools for the
management,
analysis,
visualization
and annotation
of biomedical
data



20th Century Biomedical Paradigm



Discovery

- Biological pathways
- Target identification and validation

Product Development

- Candidate selection and Optimization
- Pre-clinical testing
- Phase I, II, III
- New Drug application and Approval

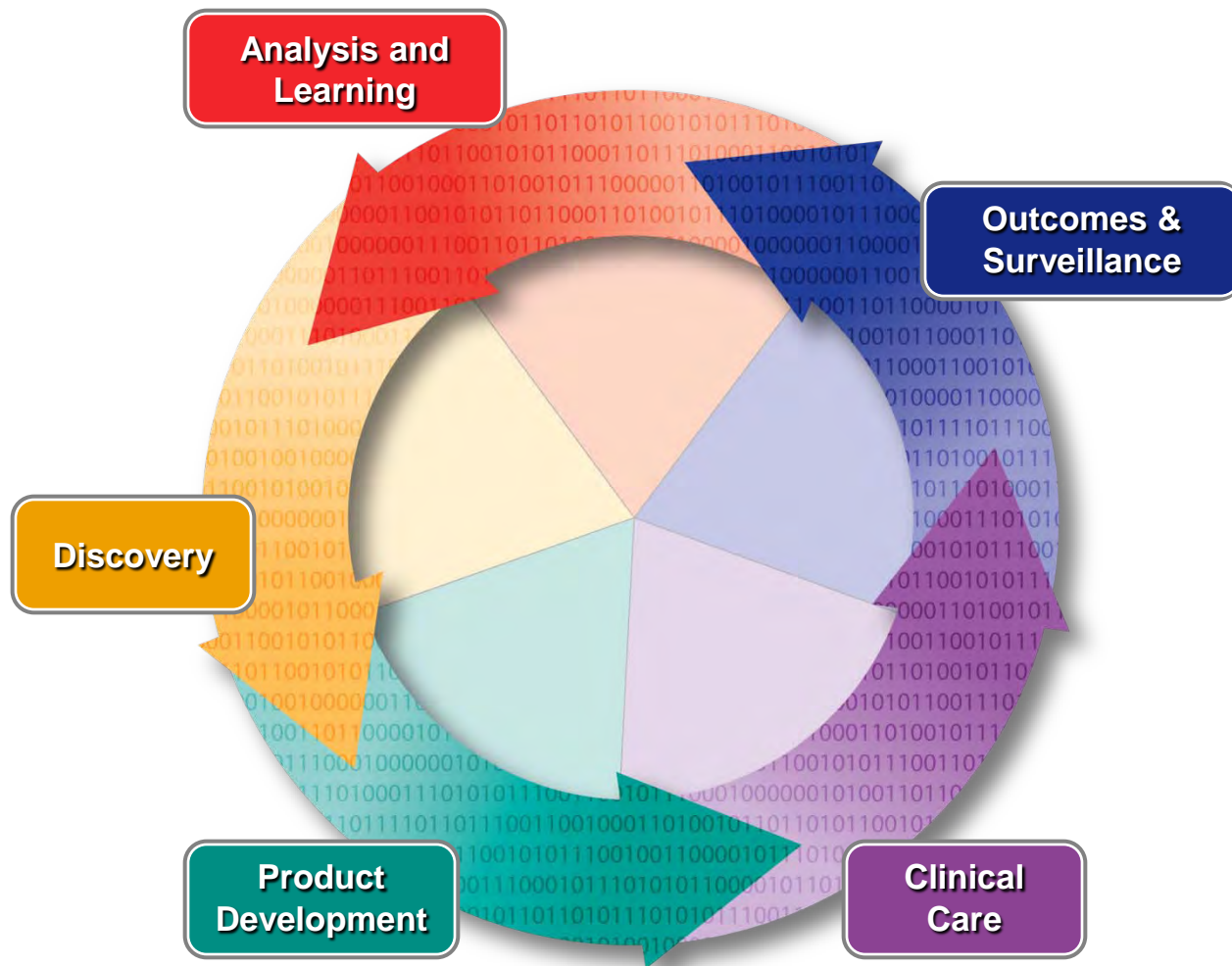
Clinical Care

- Product launch
- Clinical adoption

Outcomes & Surveillance

- Reporting of serious/fatal ADRs
- Re-labeling (or recall) as needed
- Additional indications as warranted

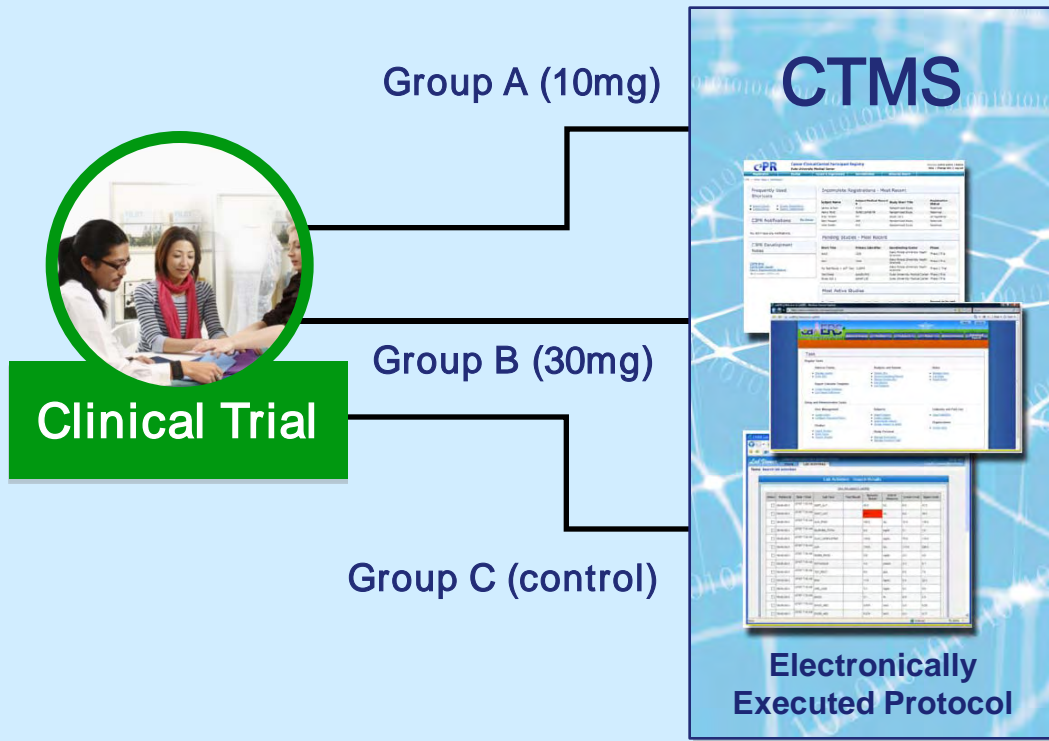
21th Century Biomedical Paradigm: a Learning Health System



Software-Enabled Bridging of Research and Care

RESEARCH

SOFTWARE

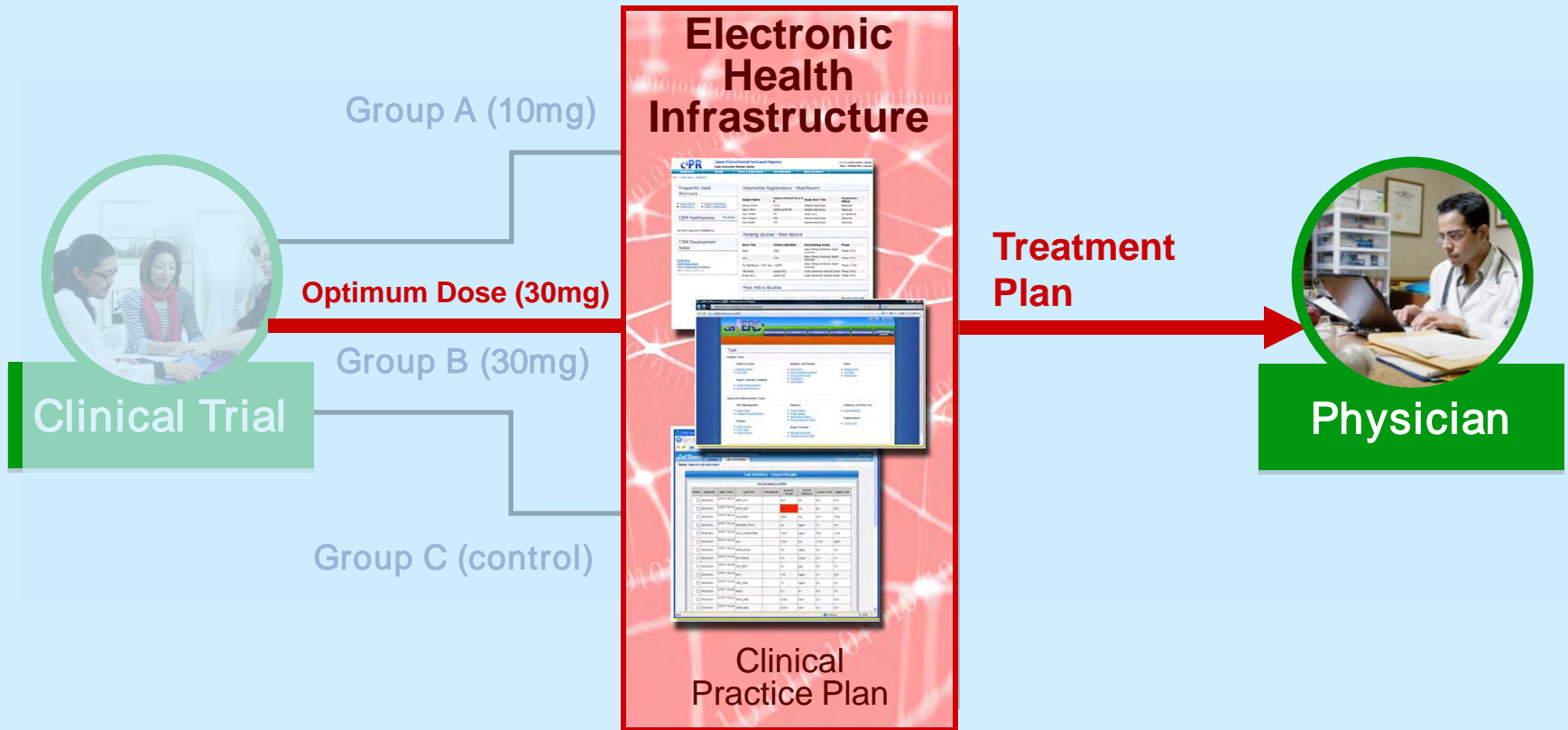


Software-Enabled Bridging of Research and Care

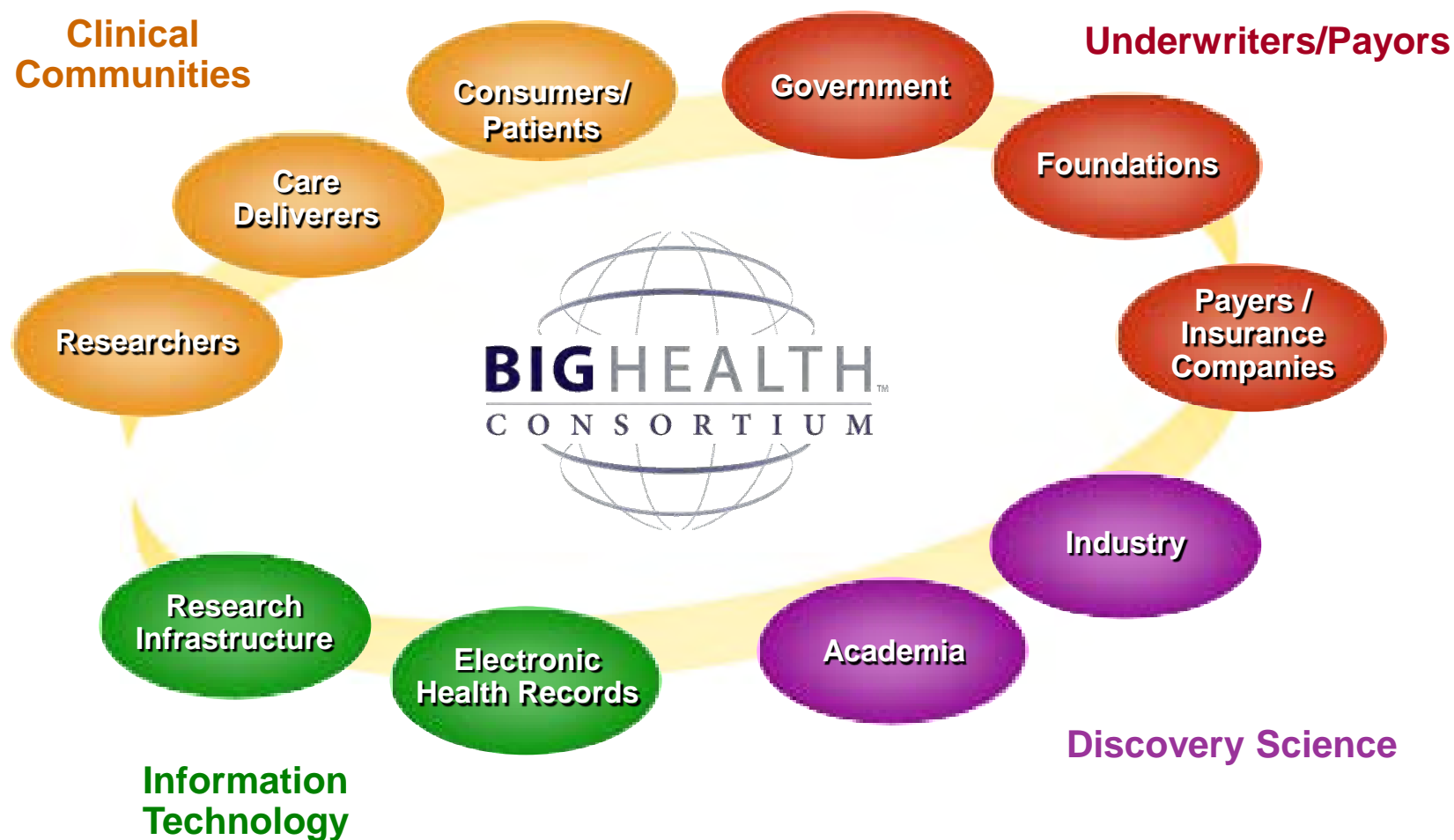
RESEARCH

SOFTWARE

CARE



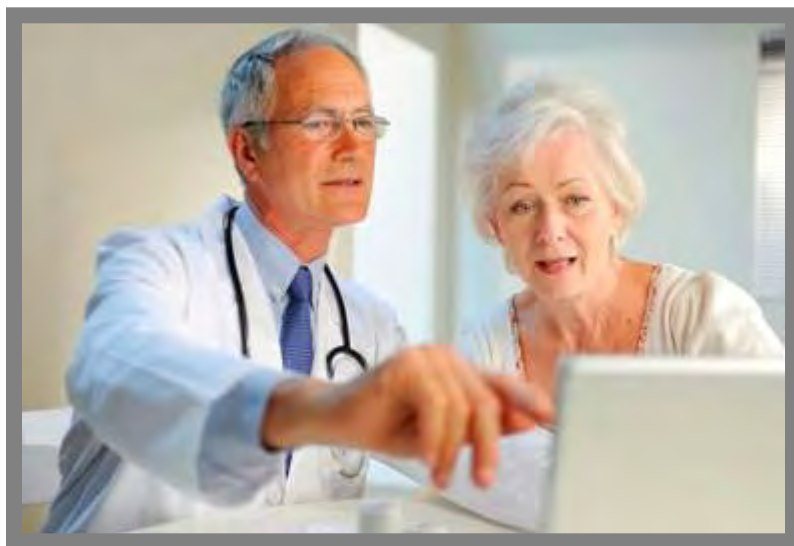
A Diverse NCI-Fostered Biomedical Ecosystem



Defining Electronic Health Records for Oncology

NCI has worked with ASCO to obtain requirements for an “Oncology-extended EHR”, now working with HL7 to define a structured specification, will subsequently develop a reference implementation

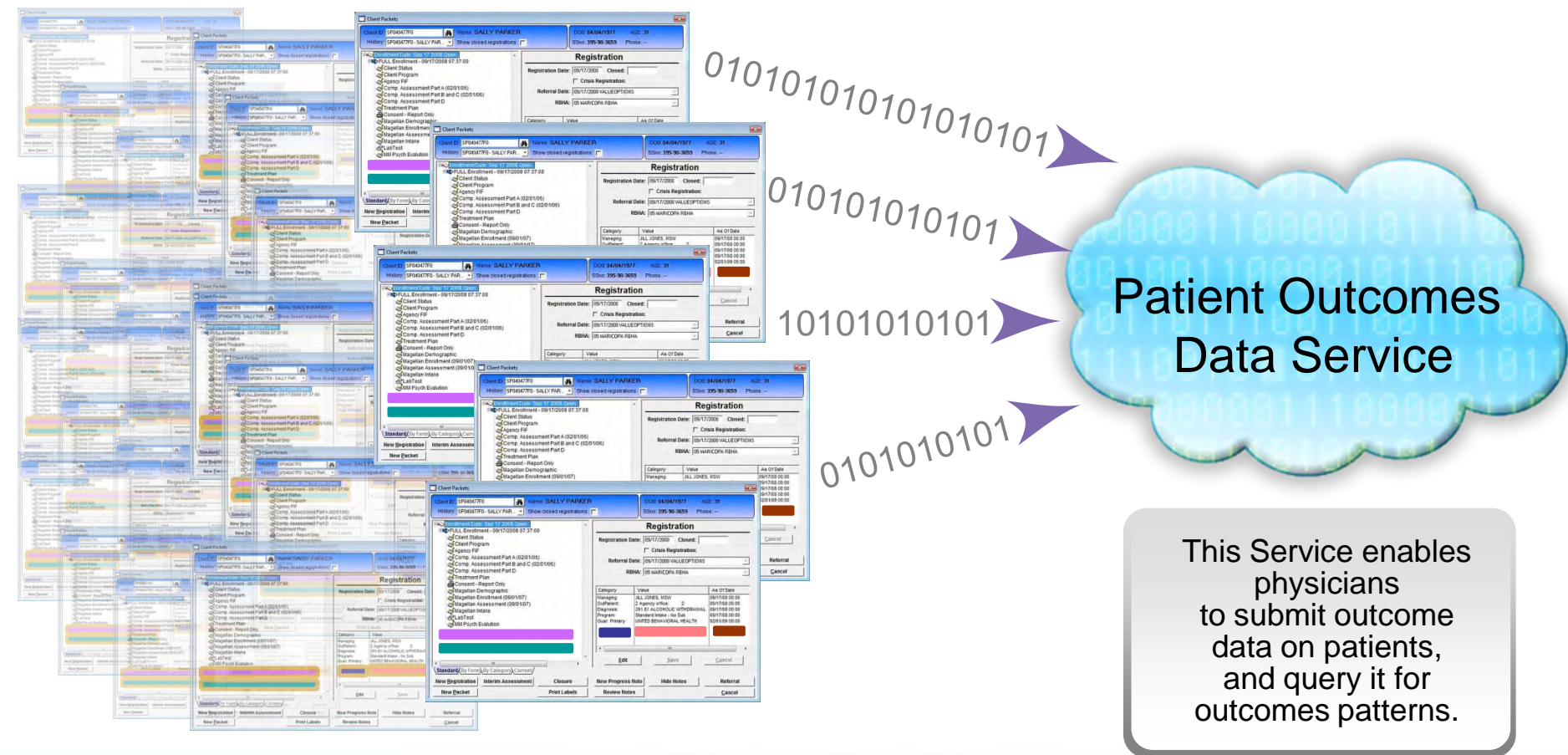
Oncology-extended EHR

A screenshot of a software interface for an Oncology-extended EHR. The interface is titled "Client Packets" and shows a list of client packets on the left. The right side displays a "Registration" form for a client named SALLY PARKER. The form includes fields for Registration Date, Referral Date, and RBHA. A table below the form lists various categories and their values. The "Chemotherapy drugs" packet is highlighted in the list on the left.

Category	Value	As Of Date
Managing	JILL JONES, MSW	08/17/08 08:00
Outpatient	2 Agency office: 2	08/17/08 08:00
Diagnosis	291.81 ALCOHOLIC WITHDRAWAL	08/17/08 08:00
Program	Standard Intake - No Sub	08/17/08 08:00
Quar. Primary	UNITED BEHAVIORAL HEALTH	08/17/08 08:00

Utilizing “Smart” Electronic Health Records to Accelerate Research

Data on hundreds of thousands of patient encounters can be fed into the Patient Outcomes Data Service electronically



Outcomes Portal

The screenshot shows the NCI Outcomes Portal website in a web browser. The browser's address bar displays the URL <https://trials-demo.nci.nih.gov/outcomes/home.action>. The page features a red header with the National Cancer Institute logo and the text "National Cancer Institute" and "U.S. National Institutes of Health | www.cancer.gov". Below the header is a blue navigation bar with the "NCI Outcomes Portal" title and a "Log In" button. The main content area is divided into a left sidebar and a main panel. The sidebar contains a "NCI OUTCOMES" section with links to "Home", "Create Account", and "Log In", followed by a "QUICK LINKS" section with links to "National Cancer Institute (NCI)", "NCI Center for Bioinformatics (NCICB)", and "caBIG™ - Cancer Biomedical Informatics Grid™". The main panel features a large banner image of a doctor and a row of smaller images of diverse people. Below the banner is the "Outcomes Home" section, which includes a "Help" link and a description: "This Site enables you to submit and manage clinical outcomes data for your patients. You can:". This section lists three actions: "Create an account" to submit data, "Log In" to manage data, and "Create a patient" or "Update and/or add data to an existing patient". At the bottom of the main panel, there is a link to the "Outcomes Reporting" website and contact information for NCICB Application Support. The footer contains a navigation bar with links to "CONTACT US", "PRIVACY NOTICE", "DISCLAIMER", "ACCESSIBILITY", and "SUPPORT", followed by logos for the National Cancer Institute, the U.S. Department of Health and Human Services, and the USA.gov logo.

NCI Outcomes Portal

National Cancer Institute

U.S. National Institutes of Health | www.cancer.gov

NCI Outcomes Portal

Log In

NCI OUTCOMES

- Home
- Create Account
- Log In

QUICK LINKS

- National Cancer Institute (NCI)
- NCI Center for Bioinformatics (NCICB)
- caBIG™ - Cancer Biomedical Informatics Grid™

Outcomes Home

Help

This Site enables you to submit and manage clinical outcomes data for your patients. You can:

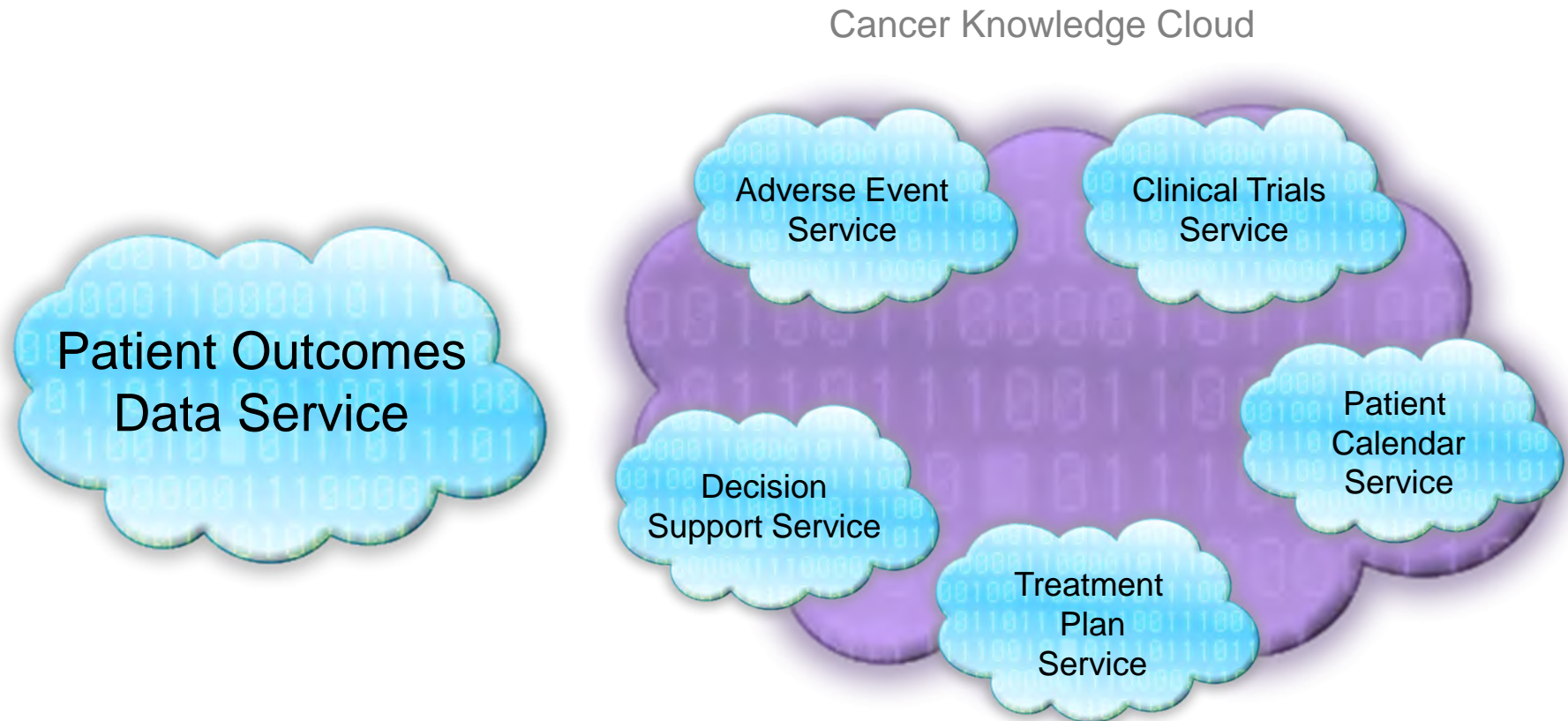
- [Create an account](#) in order to submit data on your patients
- [Log In](#) to your account and
 - Create a patient
 - Update and/or add data to an existing patient

Want to learn more about NCI's Patient Outcomes Reporting? Visit the [Outcomes Reporting](#) website.
You can also email NCICB Application Support at ncicb@pop.nci.nih.gov if you have questions or need assistance.

CONTACT US | PRIVACY NOTICE | DISCLAIMER | ACCESSIBILITY | SUPPORT

USA.gov

The Patient Outcomes Data Service is one of Many Services, Planned and Existing, for the Biomedical Community



Researchers will be able to Query the Data in the Cancer Knowledge Cloud



Cancer
Knowledge
Cloud

Epidemiologists

- Query data to seek correlations among genes, environment, outcome
- Develop standing online cohorts of volunteers

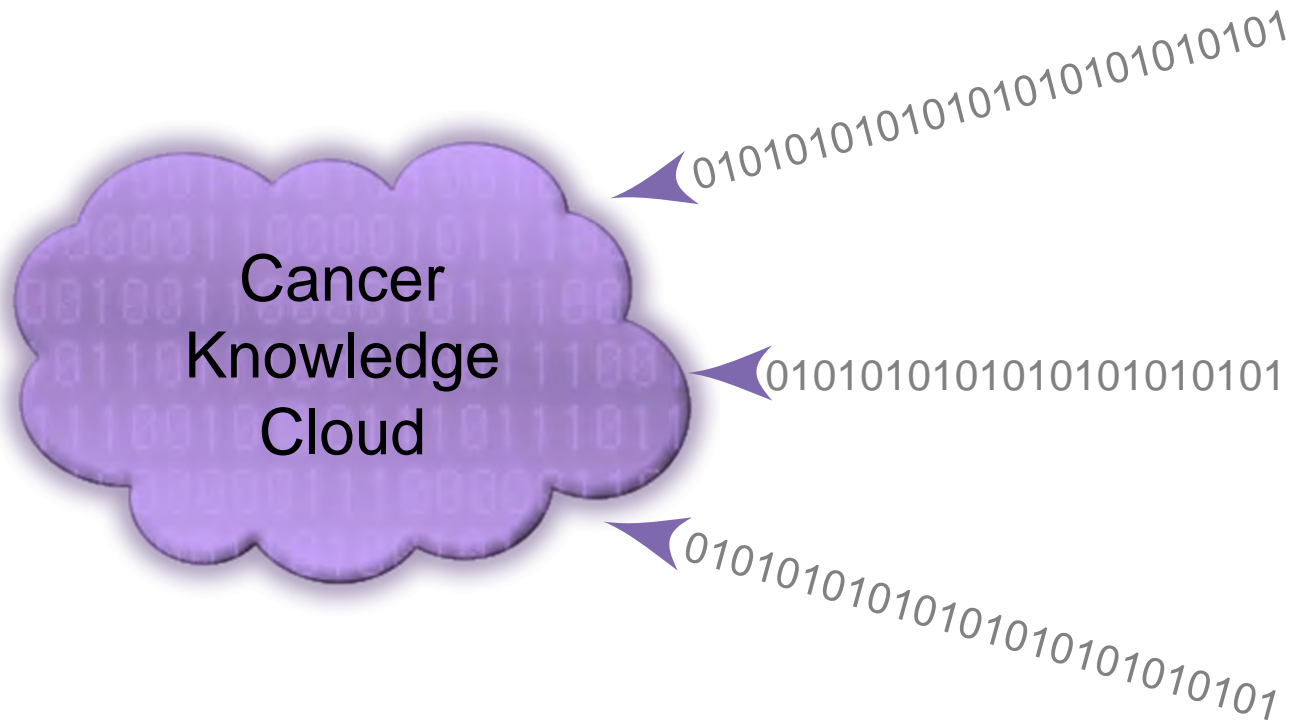
Basic Researchers

- Generate new hypotheses
- Identify biomarker-outcome correlations
- Validate biomarkers *in silico*

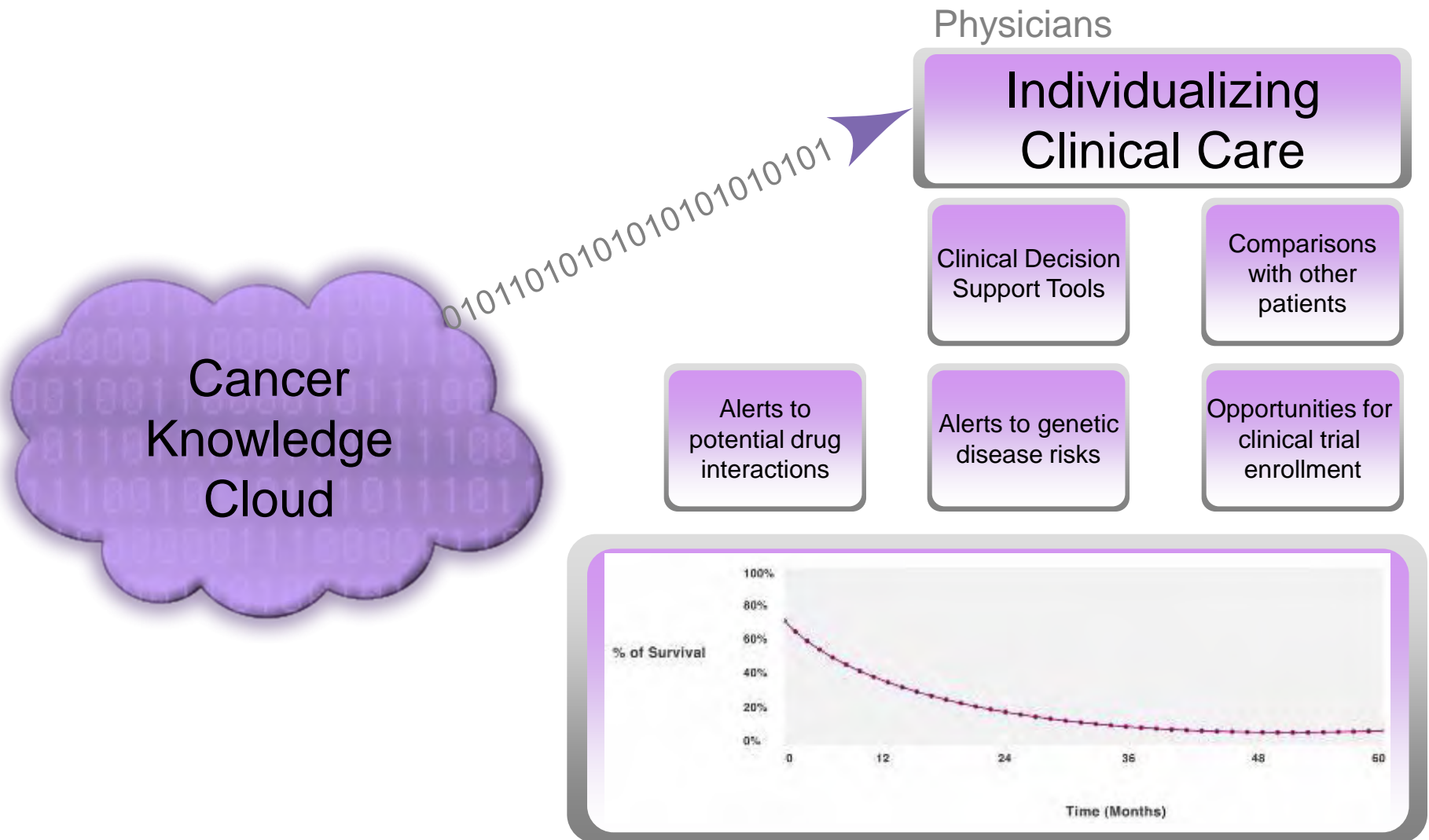
Clinical Researchers

- Seek clinical trial participants
- Enrich clinical studies with appropriate sub-groups
- Identify new indications

New Knowledge From Research is Fed into the Cancer Knowledge Cloud



All Stakeholders Benefit from the Cancer Knowledge Cloud



All Stakeholders Benefit from the Cancer Knowledge Cloud

Cancer
Knowledge
Cloud

010101010101010101

Physicians

Individualizing
Clinical Care

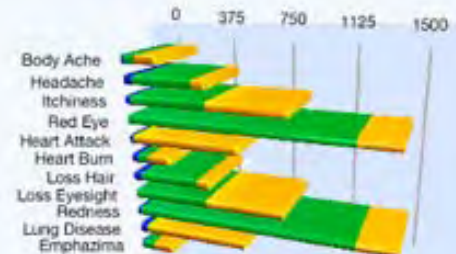
Patients / Consumers

Understanding
my options

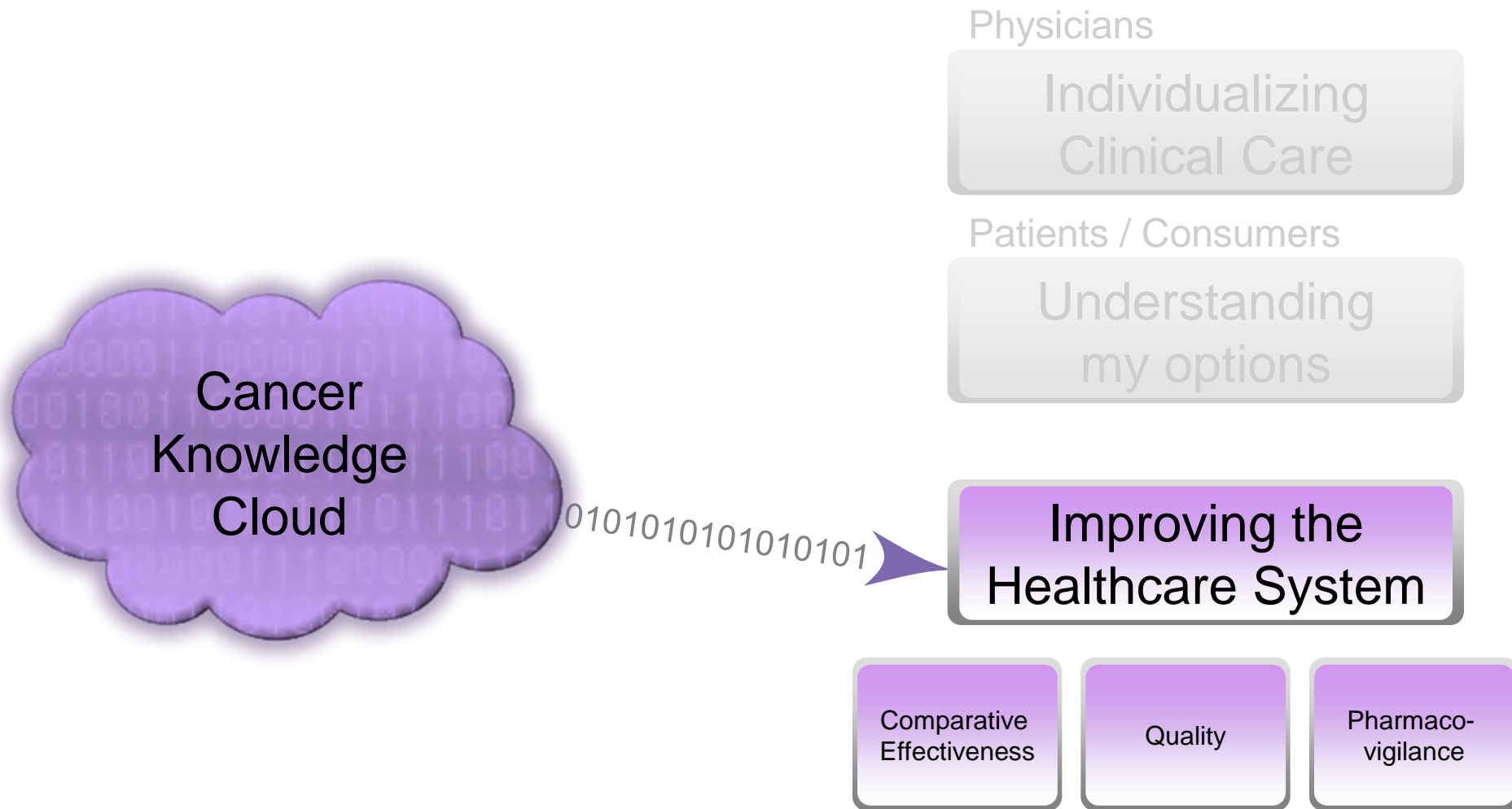
How do I
compare
to others?

How do I get into
a clinical trial?

What should I
expect from
this treatment?



All Stakeholders Benefit from the Cancer Knowledge Cloud




Take-Home Messages

- caBIG® provides standards-based infrastructure and tools to facilitate and accelerate critical functions in research and, increasingly, healthcare processes
- The Cancer Community writ large is moving towards large-scale data sharing, and those who are caBIG®-connected have an advantage
- caBIG® web-based services will soon enable organizations to partake of a-la-carte or comprehensive capabilities across the discovery-development-care continuum
- As the U.S. moves towards EHRs and full digitalization of health care, the caBIG® standards-based data interoperability will enable organizations to move data between regulators, health care providers, *etc.*
- Since caBIG® has been developed by NCI, all capabilities are freely available and open to all

Finding What You Need...

- If you want additional general information about caBIG®
 - <http://cabig.cancer.gov/>
- If you want to receive our monthly e-newsletter
 - <http://cabig.cancer.gov/resources/newsletter/>
- If you want a complete overview of the caBIG® program
 - <https://cabig.nci.nih.gov/training/cabigessentials/player.html>
- If you want a complete list of caBIG® tools
 - <https://cabig.nci.nih.gov/adopt/>
- If you want a demo-for-the-perplexed
 - Call (301) 594-3602

<http://cabig.nci.nih.gov>

**National Cancer Institute**
National Cancer Institute
Cancer Biomedical Informatics Grid™

U.S. National Institutes of Health | www.cancer.gov

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[Clinical Trials Management Systems](#)
[Integrative Cancer Research](#)
[In Vivo Imaging](#)
[Tissue Banks and Pathology Tools](#)
[Cross Cutting Workspaces](#)
[Architecture](#)
[Vocabularies & Common Data Elements](#)
[Strategic Level Workspaces](#)
[Data Sharing & Intellectual Capital](#)
[Documentation & Training](#)

Welcome to the caBIG™ Community Website!

The National Cancer Institute is launching a 21st century information initiative that will transform the way we do cancer research. We are creating a network that will freely connect the entire cancer community. In doing so, we are leveraging valuable resources and saving precious time toward new discoveries.

New visitors are encouraged to visit [About caBIG™](#). If you are already familiar with caBIG™ but looking for a synopsis of recent activities by the workspaces and SIGs look at [What's BIG This Week](#) and the monthly newsletter [caBIG™ Links](#).

Get Started

- [About caBIG™](#)
- [caBIG™ FAQs](#)
- [How It Works](#)
- ["caBIG™ Essentials" Self-Paced Training Program](#)
- [Getting Connected with caBIG™](#)
- [Glossary](#)

Products

- [Tools, Infrastructure, Data Resources](#)
- [Compatibility Guidelines & Certification](#)
- [Data Standards](#)
- [Policies, Guidelines & Whitepapers](#)
- [caGrid \(the "grid"\)](#)

Participant Shortcuts

- [What's BIG This Week](#)
- [Events & Calendar](#)
- [caBIG™ Links \(newsletter\)](#)
- [Materials for Speakers](#)
- [Workspaces & SIGs](#)

caBIG™ Spotlight

Biomedical Informatics Without Borders
Presentations now available from the joint NCRI-NCI conference.
[Learn More](#)

caBIG™ Enterprise Support Network Knowledge Center Sites Launched.
[Learn More](#)

caBIG™ Wins Best Practices Editors' Choice Award
Awarded by Bio-It World.
[Learn More](#)

caBIG™ News


[10-20-2008](#)
Requesting Applications for caBIG® Support Service Providers

[10-17-2008](#)
What's BIG This Week - 10/17/08

[10-16-2008](#)
caBIG® Support Service Providers

The content of this website is intended for caBIG™ participants and others needing specific information about caBIG activities and products. General audiences are invited to learn more about the caBIG™ initiative by visiting <http://cabig.cancer.gov>.

cancer Biomedical Informatics Grid®

 caBIG™

john.speakman@nih.gov

National Cancer Institute

U.S. DEPARTMENT
OF HEALTH AND
HUMAN SERVICES

National Institutes
of Health

2010 caBIG® Annual Meeting:

Building a Collaborative Biomedical Network

September 13-15, 2010

Marriott Wardman Park Hotel
Washington, D.C.

For more information visit <https://cabig.nci.nih.gov/2010AnnualMeeting>

cancer Biomedical Informatics Grid®





UCSF Partnership with CAMS PUMC

NCI caBIG Workshop

Sorena Nadaf M.S., M.MI
UCSF HDFCCC
Director, Translational Informatics Division
Director, Biomedical Informatics Core
CIO

Beijing, China June 22, 2010

UCSF HDFCCC CAMS-PUMC Partnership

Goal:

***Establish joint programs
in Cancer Research,
and Training***

UCSF HDFCCC CAMS-PUMC Partnership

- **Implementation MOU**
 - Establish joint research teams for the study, treatment, and management of cancer
- **Disease Based Research teams – Stage I**
 - Lung Cancer
 - Breast Cancer
 - Brain Tumors
 - Hepatocellular Carcinoma
 - Genito-Urinary Cancers

Each team to be led by co-investigators from each institution: one from PUMC-CAMS, and one from UCSF

Research Objectives in Partnership

- To obtain better understanding of the causes of these 5 types of cancer in China as well as the key genes and proteins involved in their progression.
- To identify new targets and pathways that drive these tumors
- To conduct early stage clinical trials with novel and promising investigational therapeutic agents
- To conduct epidemiologic research with the objectives of identifying patients with clinically significant cancer at earlier stages of disease

Training Program

- UCSF and PUMC/CAMS will initiate a clinical research training program for PUMC faculty and cancer trainees that will enhance their ability to lead cutting edge clinical research trials.
- Enrollment in specific courses like Clinical Trial Design, Biostatistics, Epidemiology, etc. at UCSF in the CTSI will be open to faculty and students with appropriate backgrounds that are selected by PUMC/CAMS for this program.

Established Training Program

- Faculty selected by PUMC/CAMS will join UCSF Helen Diller Family Comprehensive Cancer Center research teams in the 5 broad types of cancer indicated in Stage I for participation in their academic activities including Tumor Boards, Clinical and Research conferences, Protocol Review meetings, Clinical Trial meetings, and general Cancer Center research seminars.
- At the conclusion of these sabbaticals, the PUMC/CAMS faculty will return to their parent institution and serve as co-leaders of joint clinical trials with UCSF.

Partnership: To Link Clinical Trials to Correlative Scientific Research

- Discovery of Biomarkers that will be useful for treatment of cancer patients
- Investigation of the critical biochemical pathways that mediate the beneficial effects of TCM's

Underlining Elements: Biospecimen, Clinical and Biomedical Informatics

- UCSF will partner with PUMC/CAMS to establish annotated, state of the art research tissue banks as well as a robust clinical trials data base that will enable and enhance joint clinical research trials with the UCSF-Helen Diller Family CCC

Translational Informatics at UCSF

Mission:

Deliver Suite of Informatics Services to support translational, biomedical, and clinical research, as well as clinical care improvement.

Focus:

- Capture, Storage, Dissemination of Clinical, Biomedical, and Research Data that can easily be merged, integrated, or aggregated with other data sets.
- Development of unified technology platforms leveraging cutting-edge advances in Informatics and computing.

Mapping Goals to Informatics Platforms

Cancer Center Goals

Corresponding TI & caBIG Platforms

Expanding Clinical and Translational Research Capability

- ✓ Clinical research
- ✓ Research infrastructure
- ✓ Phenotyping

- **caArray** (Array Data Management)
- **caTissue** (Biospecimen Management)
- **URM** (Unified Registry Module – SPORE DB)
- **REDCap / REDCap Survey** (Light DB / Survey System)
- **CTMS** : OnCore / BSM / Caisis
- **CALAEGS**: Automated Adverse Event Grading
- **Medidata RAVE** (Cooperative Group Trials)
- **caIMAGE** (Image Data)

Enhancing Collaborations

- ✓ Social networking
- ✓ Resource sharing
- ✓ Data sharing

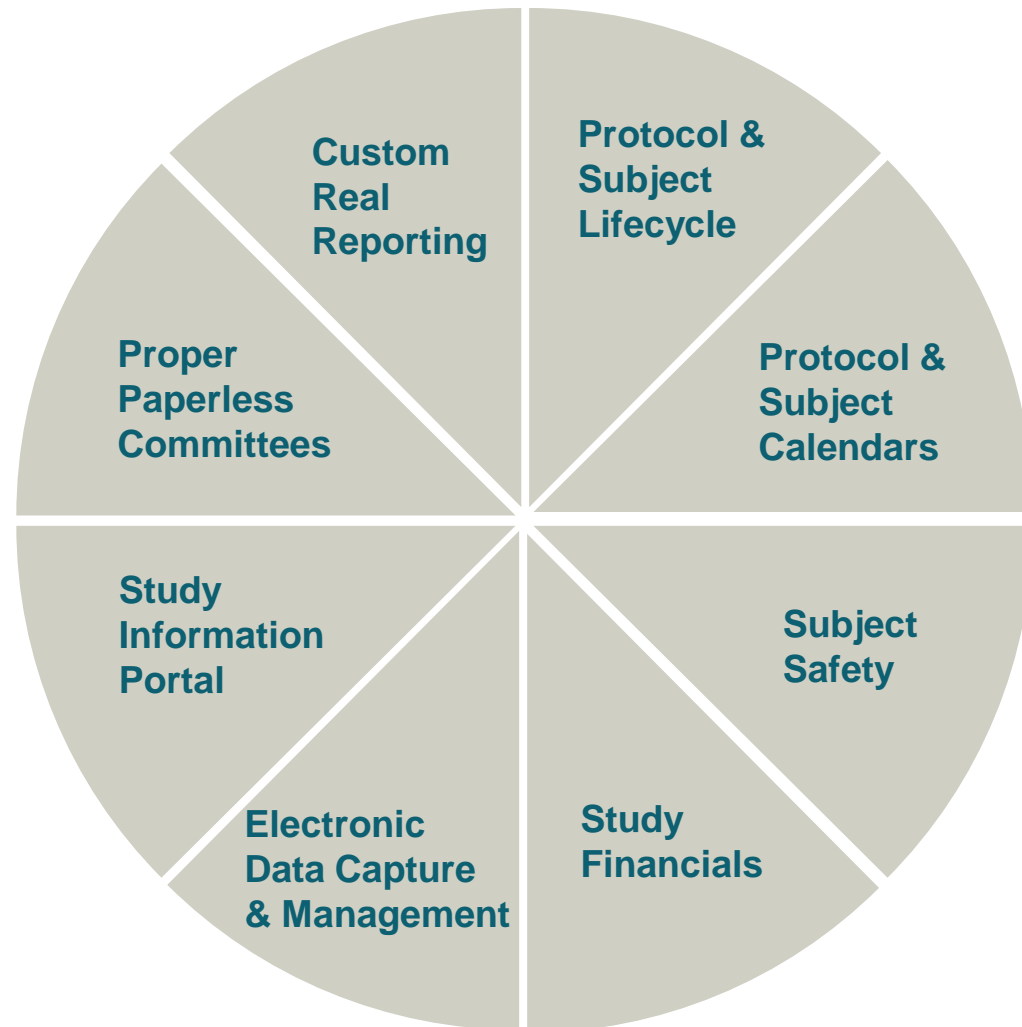
- **caGRID** (Electronic Data Interchange)
- **Mirth & caXchange** (Lab Data Service Bus)
- **Lab Viewer** (Clinical System “Wrapper”)
- **Cancer Electronic Data Warehouse**
- **LatticeGrid**
- **caLIMS**

Encouraging T1 Translational Research

- ✓ Knowledge translation
- ✓ Hypothesis generation

- **UCSD Genome Browser**
- **caGWAS** (GWAS query processing, SNP Data)
- **GenePattern** (Genomic Data Analysis)
- **geWorkbench** (Biomarker Data Analysis)
- **caIntegrator2** (Translational Data Analysis)
- **Ingenuity IPA** Pathway Analysis
- **Oncomine**

Example Lifecycle Clinical Research Management





Cancer EDW Principles :

PUMC CAMS ↔ UCSF

- Built to accept heterogeneous data sources from multiple sources based on metadata architecture
- A single global repository provides data resources for patients, research, and healthcare
- Use of data marts allows for the creation of customized data sets to meet user needs
- Data can be exported to other systems as required
- Designed using standard technologies that provide flexibility and scalability

HDFCCC
CAMS
PUMC

Multi
Dimensional
caEDW



Researcher
View



Clinician
View



Patient
View

UCSF Collaboration Acknowledgements

Marc Shuman, M.D.

Clinical Director QB3

Professor of Medicine UCSF

UCSF – PUMC CAMS Partnership Leader*

Frank McCormick, PhD., FRS

Director, UCSF Helen Diller Family Comprehensive Cancer
Center

Eric Small, M.D.

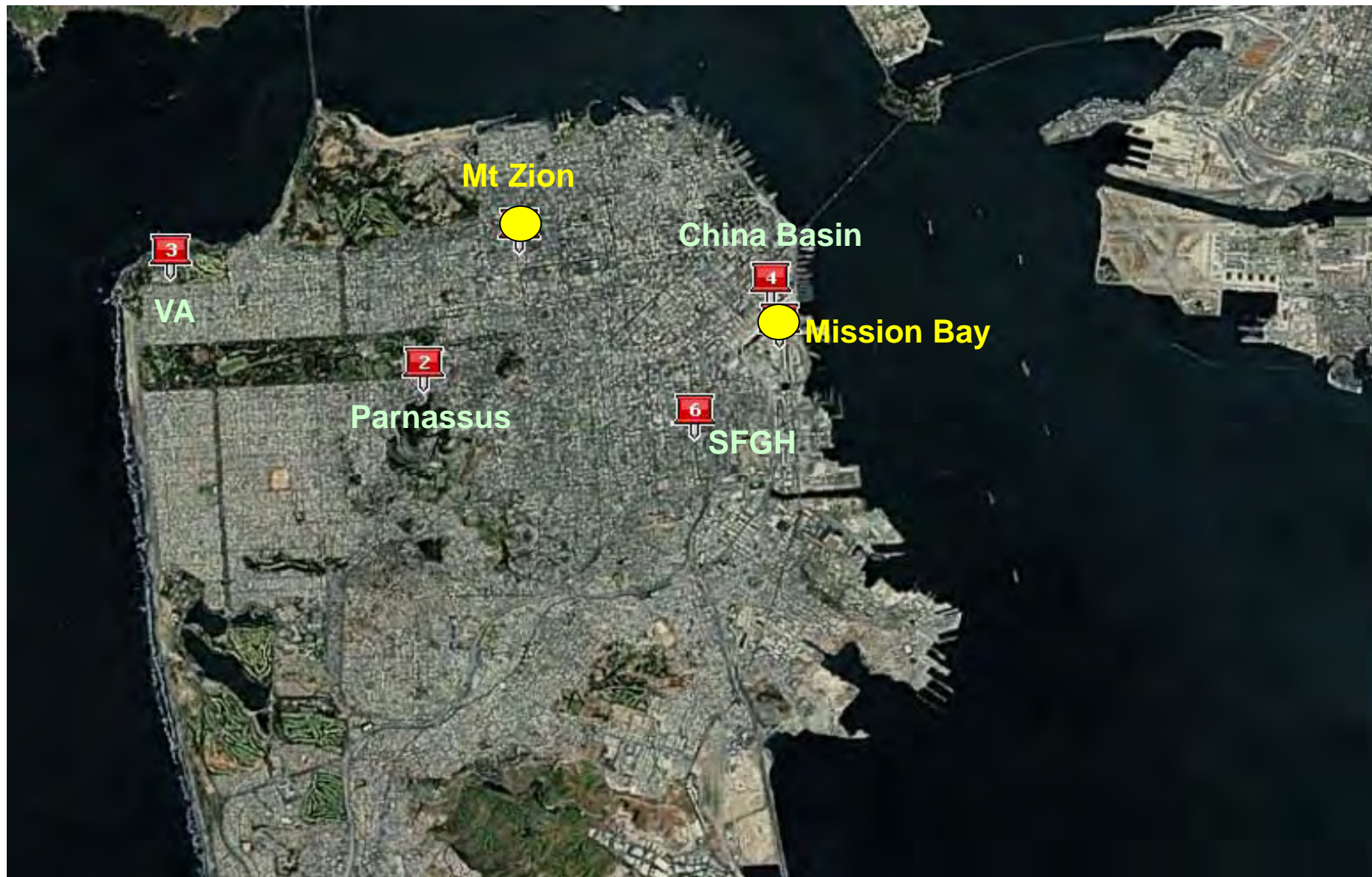
Chief, Division of Hematology and Oncology

Director of Investigational Therapeutics and Deputy Director,
UCSF Helen Diller Family Comprehensive Cancer Center

Susan Desmond-Hellmann, M.D., M.P.H.

UCSF Chancellor

UCSF Translational Informatics : Current Locations



A high-angle, wide shot of the Golden Gate Bridge in San Francisco. The bridge's iconic orange-red towers and suspension cables are prominent, stretching across the frame from the foreground towards the distant city and hills. The water below is a deep blue-grey, and the sky is a clear, pale blue. The bridge is filled with cars, and the city skyline is visible in the background under a hazy sky.

非常感谢！

有問題嗎？



University of California
San Francisco

advancing health worldwide™



Enabling 21st Century Cancer Research: Update DUKE-PKU Cancer Program

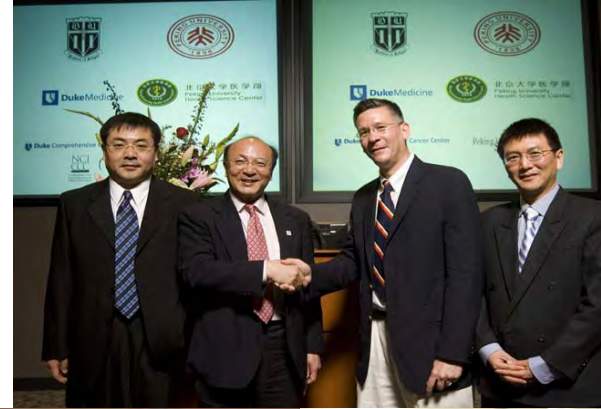
Prof H. Kim Lyerly, M.D.
Director, Duke
Comprehensive Cancer
Center

Prof. Jun Ren M.D. PhD
Director, Department Medical Oncology
Executive director, Clinical Trial Center
Peking University School of Oncology/
Beijing Cancer Hospital
Faculty, Duke Comprehensive Cancer Center

June 22 2010, Beijing

DUKE-PKU Cancer Program

- Signed the MOU on 26 Apr. 2007
- CaBIG Workshop at Beijing on 6 Sep. 2007
- CaBIG Training at Duke From 30 Jan. to 16 Feb. 2008



caBIG at Duke

- **Developer**

- **Cancer Central Clinical Participant Registry (C3PR)**

- **caTRIP**

- Many elements part of other caBIG applications

- **RProteomics**

- **VCDE Mentorship**

- **CTMS Knowledge Center**

caBIG at Duke

- **Adopter**

- **Flagship C3D implementation**

- Many trials in production, many more in development

- **C3PR multi-center pilot**

- **caAERS (CALGB and Duke) (in progress)**

- **caGRID**

- **caArray (in progress)**

Impact of caBIG at Duke

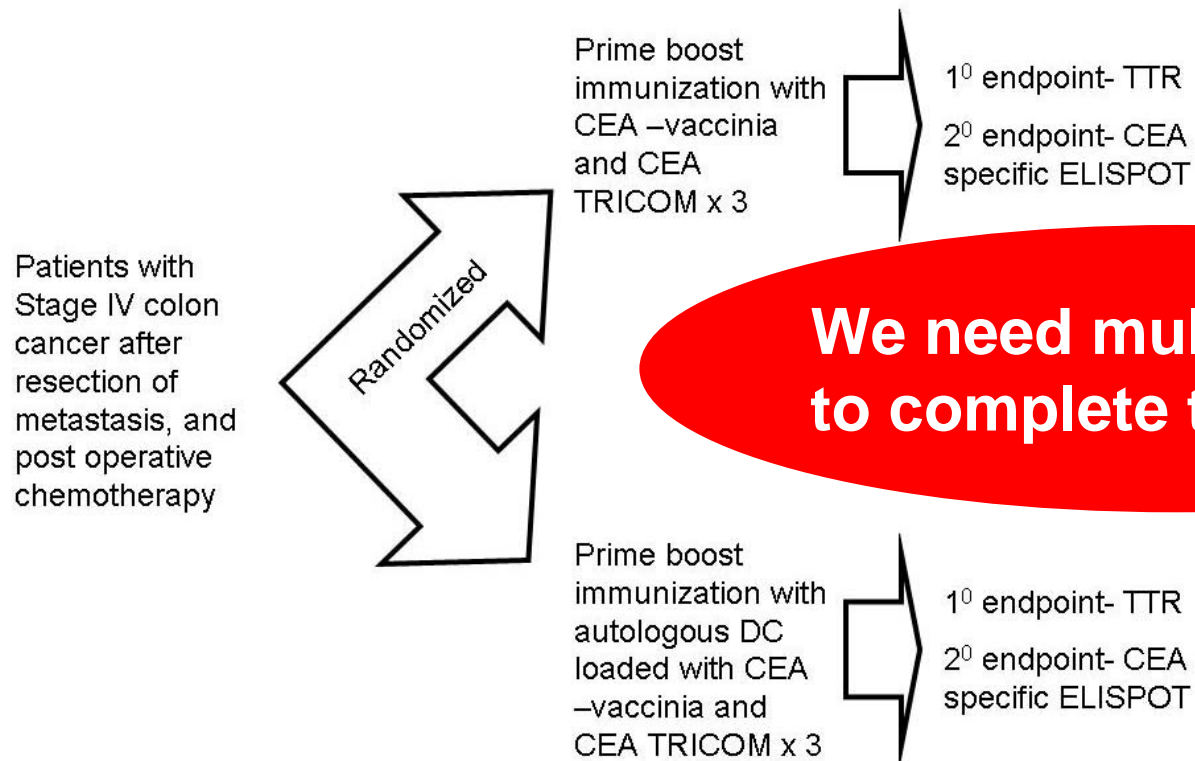
- Investment strategy and long term IT planning aligned with caBIG goals
- Enabling novel clinical trials between cancer centers
- Enabling biomarker intense (real time gene array based) clinical trials
- Improving access and services to underserved populations

A randomized phase II trial

A) DC infected with rV-CEA(6D)-TRICOM followed by DC infected with rF-CEA(6D)-TRICOM

versus

B) rV-CEA(6D)-TRICOM followed by rF-CEA(6D)-TRICOM along with in situ GM- CSF following hepatic metastasis resection and adjuvant chemotherapy.



We need multiple sites to complete this study!!

**Manufacturing
and QA/QC of
vaccine, analysis
of immune
response**

**Portland Medical
Center**

**Duke University
Medical Center**

**Moffitt Medical
Center**

**Collection of cells,
distribution of vaccine,
collection of data**

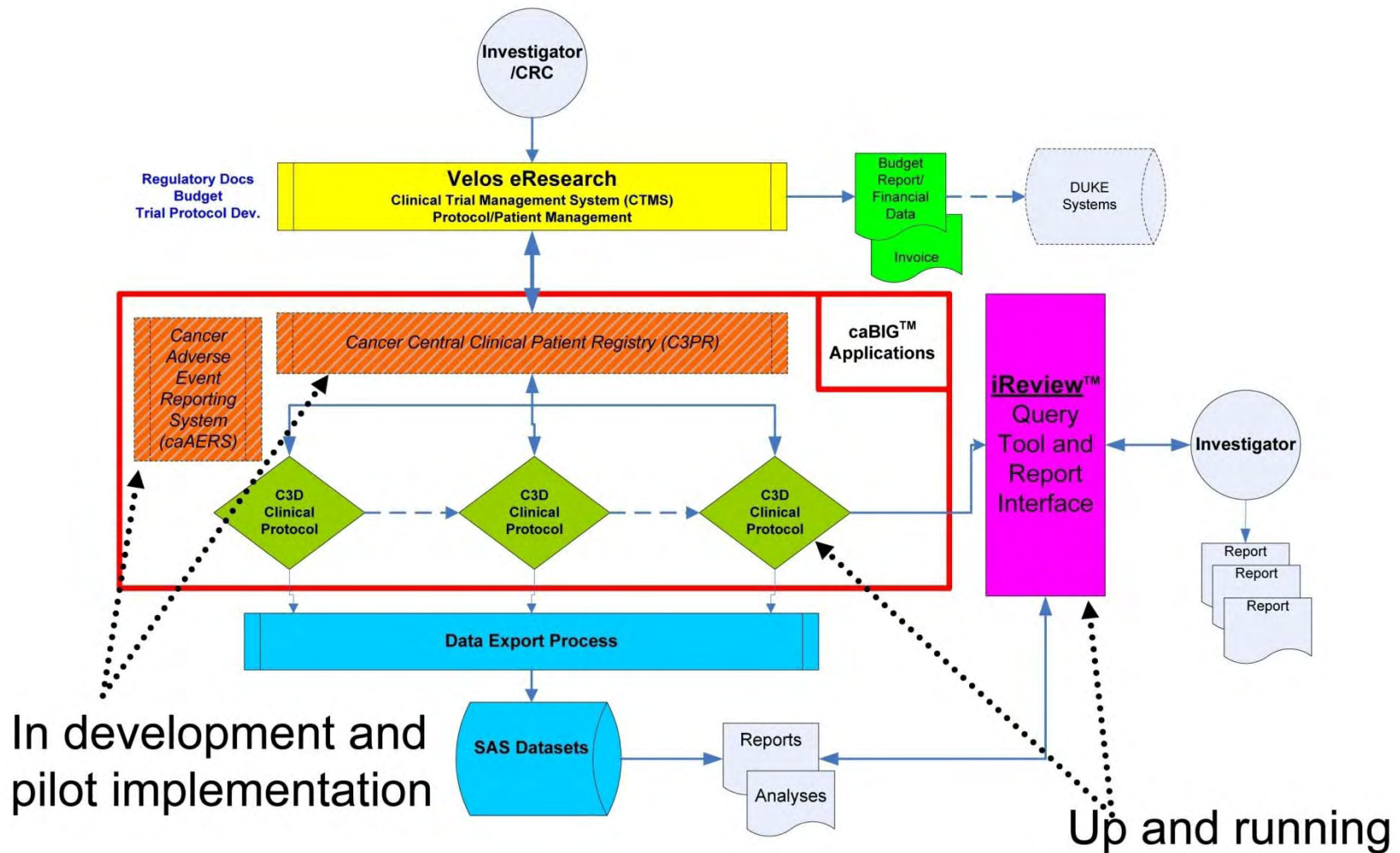
**Medical University
of South Carolina**

MD Anderson

Georgetown

**WakeForest/
Bowman Gray**

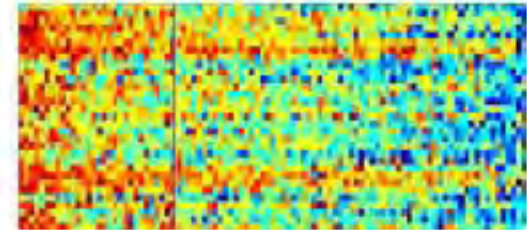
Clinical Trial Software Elements



Lung Cancer Prognostic Markers

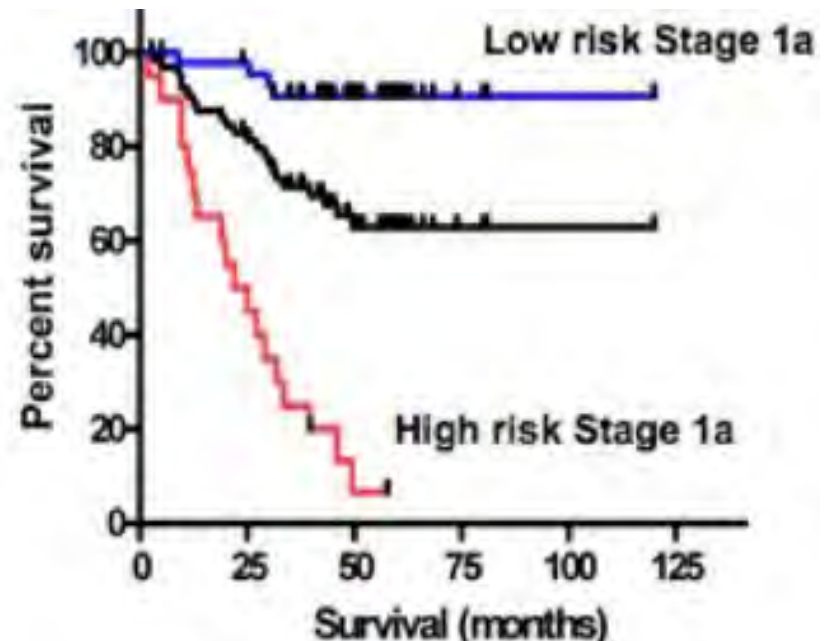


The NEW ENGLAND
JOURNAL of MEDICINE



A Genomic Strategy to Refine Prognosis in Early-Stage Non-Small-Cell Lung Cancer

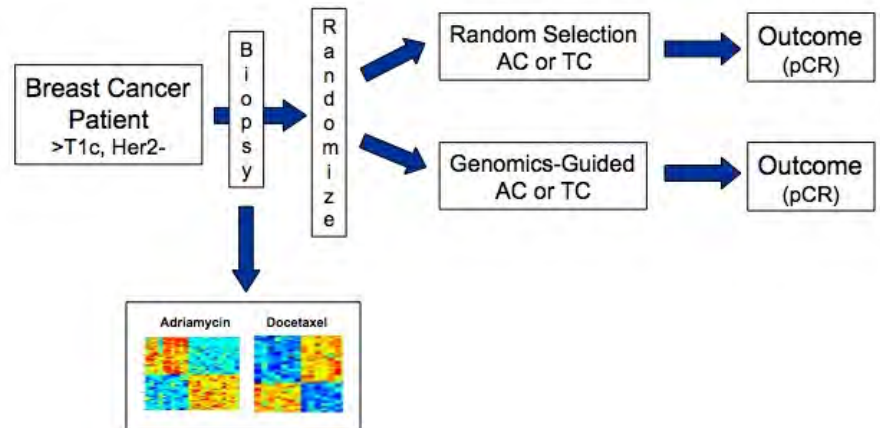
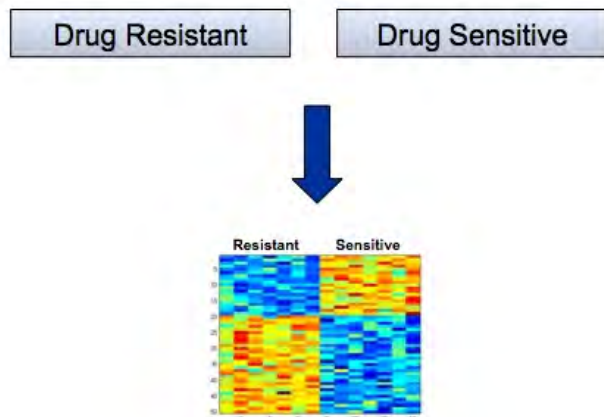
Anil Potti, M.D., Sayan Mukherjee, Ph.D.,
Rebecca Petersen, M.D., Holly K. Dressman,
Ph.D., Andrea Bild, Ph.D., Jason Koontz, M.D.,
Robert Kratzke, M.D., Mark A. Watson, M.D.,
Ph.D., Michael Kelley, M.D., Geoffrey S.
Ginsburg, M.D., Ph.D., Mike West, Ph.D., David
H. Harpole, Jr., M.D., and Joseph R. Nevins,
Ph.D.

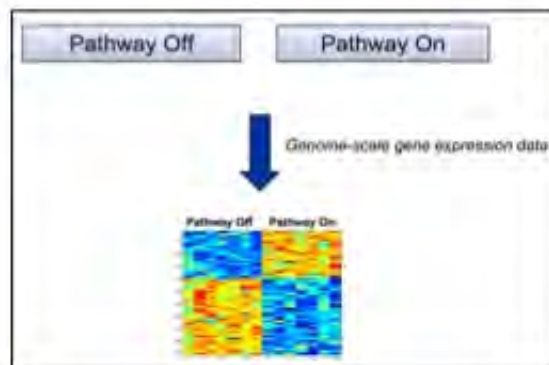
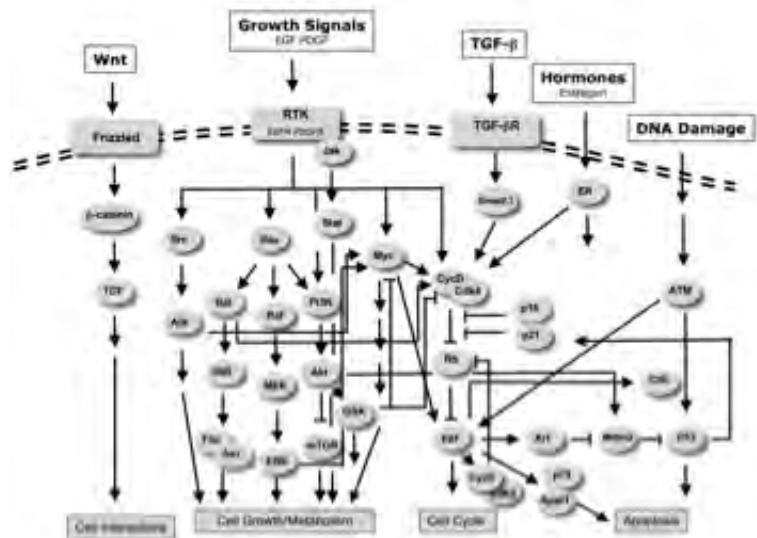


Predictive Markers-Chemotherapy

Potti, A., Dressman, H. K., Bild, A., Riedel, R. F., Chan, G., Sayer, R., Cragun, J., Cottrill, H., Gray, J., Marks, J., Kelley, M., Berchuck, A., Petersen, R., Harpole, D., Ginsburg, G. S., Febbo, P., Lancaster, J. M., and Nevins, J. R. (2006). A genomic strategy to guide the use of chemotherapeutic drugs in solid tumors. *Nat. Med.* 12, 1294-1300.

BOP0701 – A Randomized Phase II Study to Evaluate the Capacity of Expression Signatures to Guide Neoadjuvant Breast Cancer Chemotherapy (DOD Breast Program)

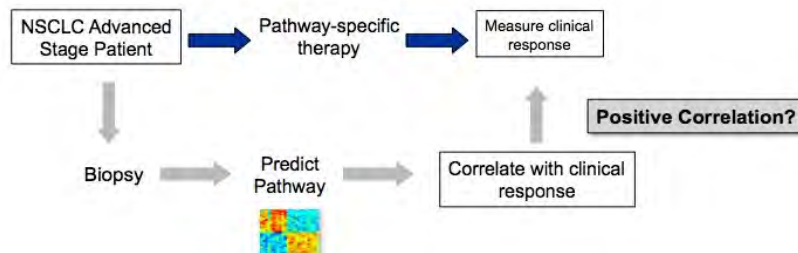




Nature 439, 353-357.

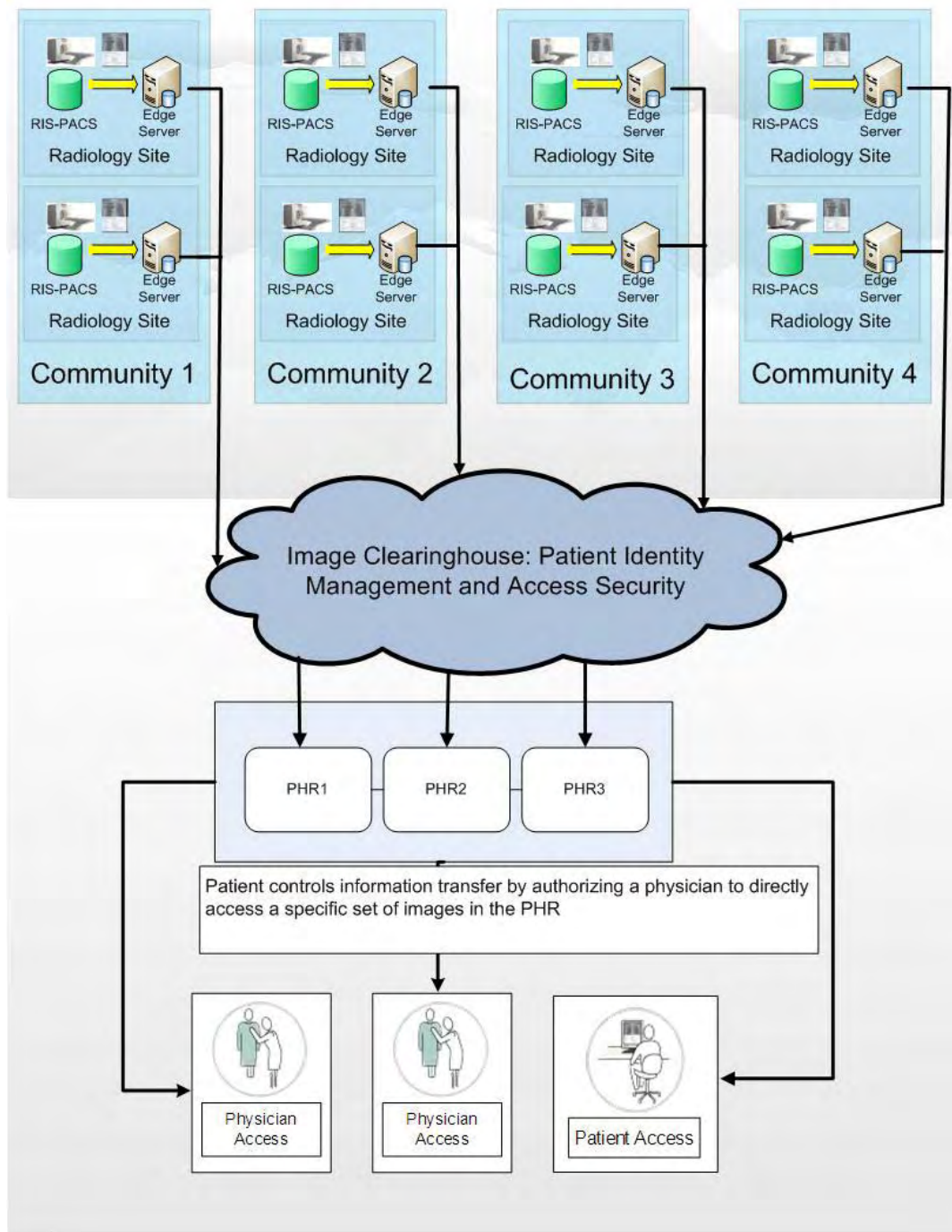
Can gene expression profiling demonstrate an activated pathway, suggesting that inhibition would predict response to a therapy?

Phase II Studies to Evaluate a Src Pathway Signature as a Predictor of Dasatinib Response

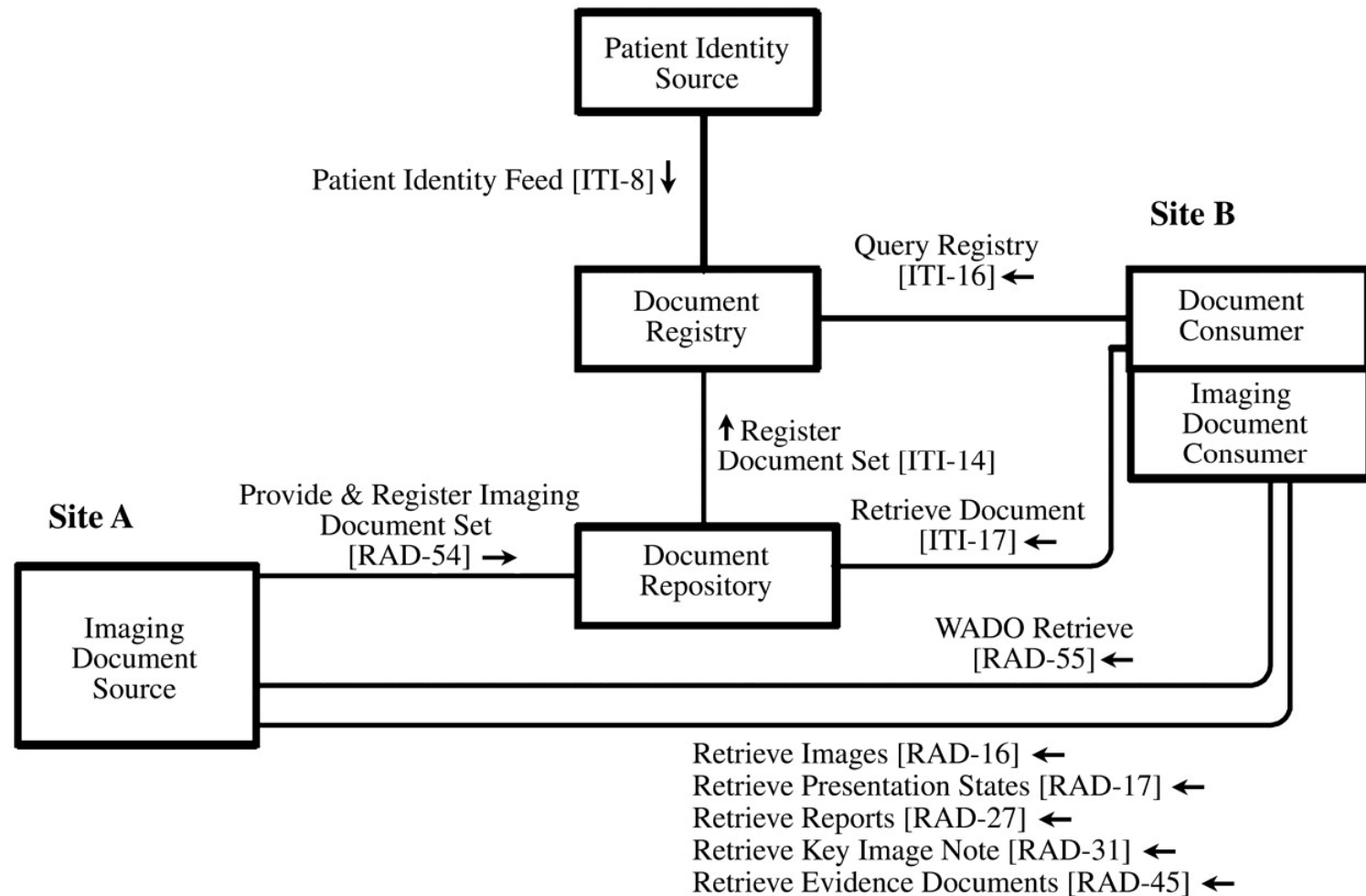


Patient-controlled Exchange of Breast Imaging Studies to Healthcare Providers

- **web-based system**
- **allows patients to access, download and transfer the DICOM files of all their imaging studies.**
- **makes them usable by medical care providers or researchers at any other medical center.**
- **improve health care**
- **reduce radiation dose from unnecessary duplicate imaging studies**
- **facilitate a wide array of research that requires data from images**



Technical Architecture for Image Transfer





**Duke University
Medical Center**

**Duke Comprehensive
Cancer Center**

**Collection of tumors
collection of data**

**Gene expression
analysis and
generation of
gene signature**

**Peking University
Beijing Cancer Hospital**

Other Clinics



中国肿瘤2008年第17卷第5期

网格技术在医学研究中的应用实例—— caBig 简介

张 燕, 李 鸢 (北京大学临床肿瘤学院, 北京 100036)

An Example of caBig: Application of Grid in Medical Research // ZHANG Yan, LI Zhi

摘 要: 全文介绍美国国立卫生研究院(NIH)通向医学生物学未来研究路线图计划的试点项目癌症生物医学信息网格(caBig)的主要特点、目标和研究内容。NCI认为caBig的出现将会改变癌症研究进行的传统方式, 全面推进恶性肿瘤医学领域各方面的研究。

关键词: caBig; 网格; 互联网; 肿瘤

中图分类号: R730.1; TP393 文献标识码: C 文章编号: 1004-0242(2008)05-0354-02

A Phase II Study of Abraxane® and
Carboplatin as First-Line
Treatment for “Triple Negative”
(Demonstrating no Expression for
Estrogen, Progesterone, or HER2
Receptors) Metastatic Breast Cancer

PI

DUKE: Kim Blackwell

Peking: Jun Ren

Kim Lyerly

SCHEMA

A Phase II Study of Abraxane® and Carboplatin as First-Line Treatment for “Triple Negative” (Demonstrating no Expression for Estrogen, Progesterone, or HER2 Receptors) Metastatic Breast Cancer in Chinese people

Histologic confirmation of adenocarcinoma of the breast(Stage IV or inoperable III)

Registration

**Abraxane® 100 mg/m² IV over 30 min days 1,8,15 and 7 days off
Carboplatin AUC=2 over 15 minutes days 1,8,15 and 7 days off**

Continue until disease progression

OBJECTIVES

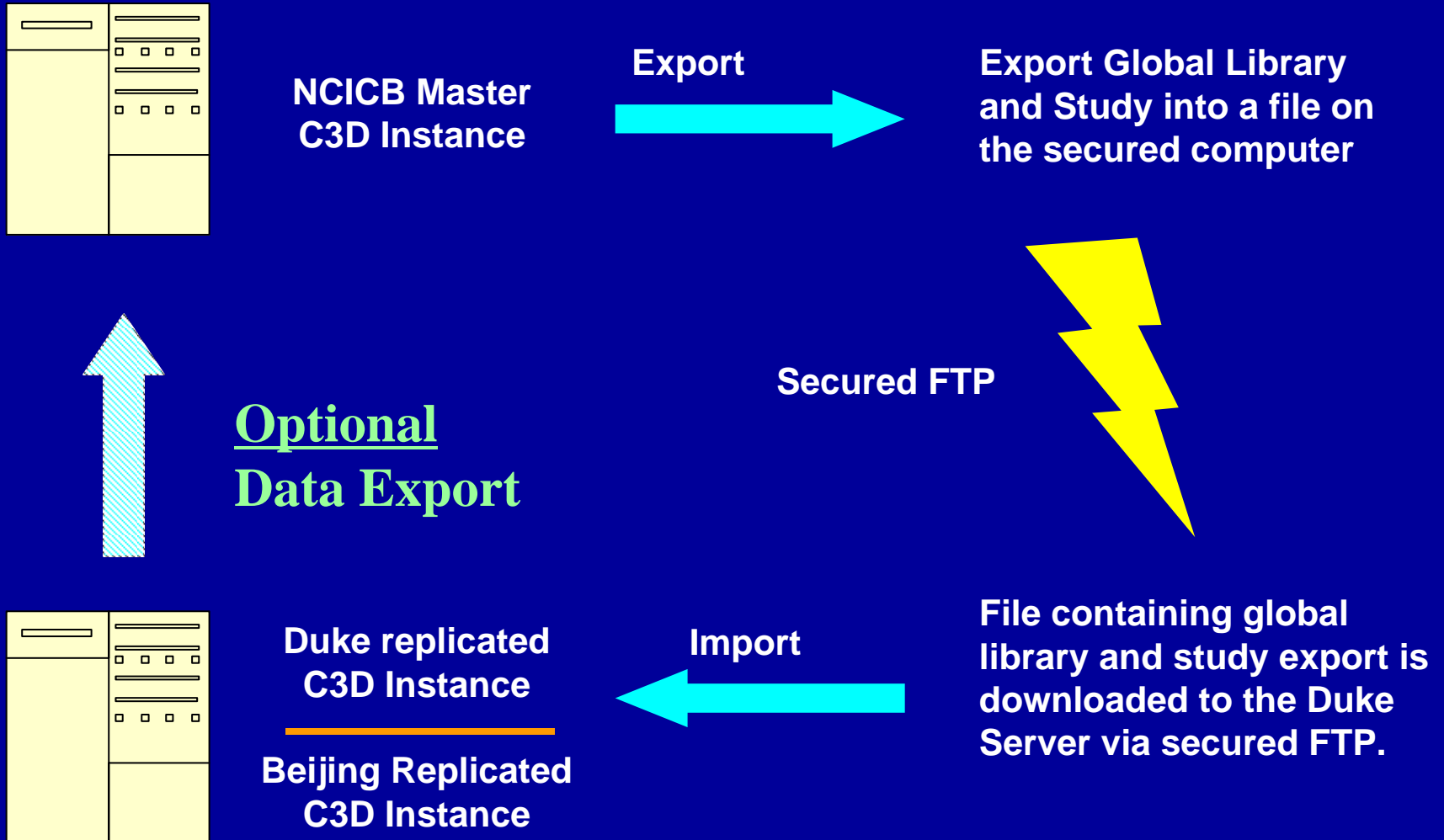
Primary Objective:

- To compare the PFS of this regimen in Chinese patients with that in American patients with "triple negative" Stage IV or inoperable Stage III metastatic breast cancer.

Secondary Objective:

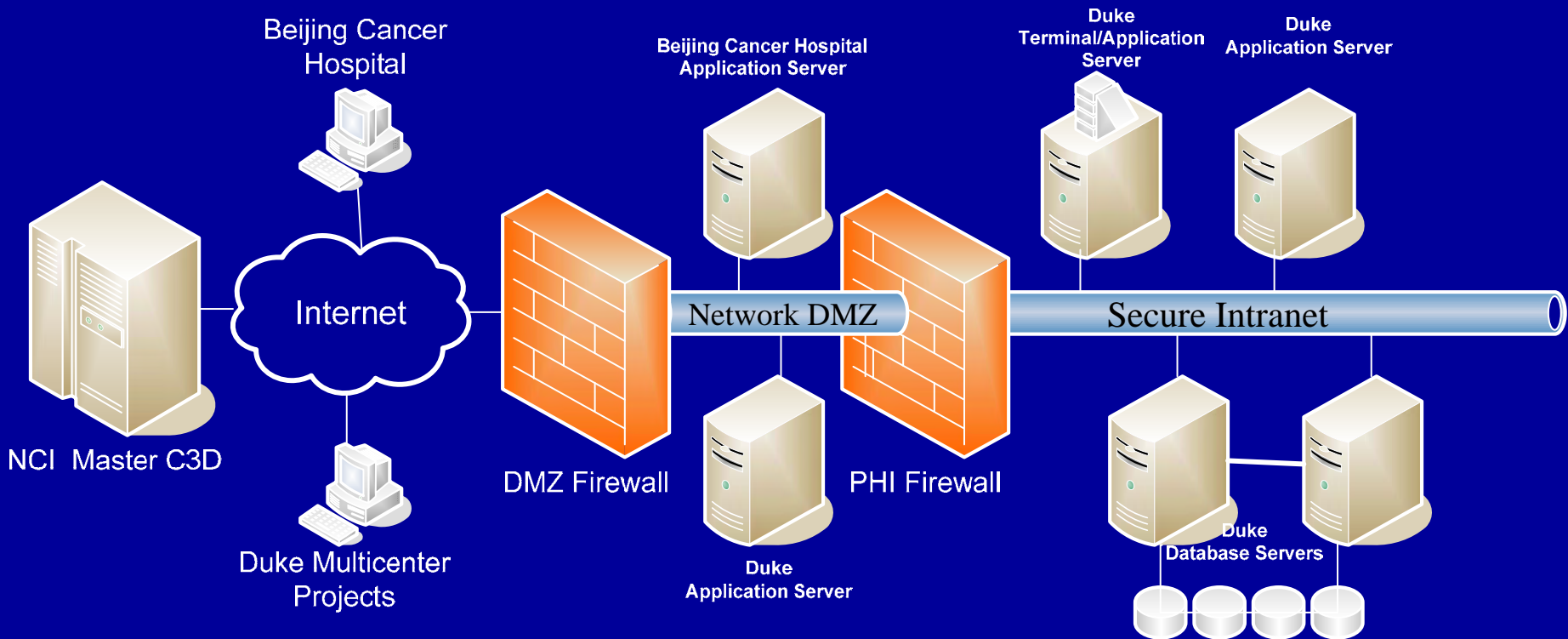
- To explore the molecular biological mechanism reactive to his regimen, including the genomic and proteomic mechanisms.
- To assess the safety and tolerability of a combination regimen of weekly Abraxane® and carboplatin to treat Chinese women with "triple negative" Stage IV or inoperable Stage III metastatic breast cancer.

Independent Replication Processes



C3D : Cancer Central Clinical Database

Internet/Intranet Security



- User connection to Application 128 bit encrypted
- Application server to be secured by Oracle Advanced Security option

Fulfill our needs

- Clinical Trial Management System (CTMS)
 - For the management of clinical trials
 - Documents (protocol, Consent, etc.)
 - Financial (Budget prep., invoicing, subcontracts)
- Clinical Data Management System (CDMS)
 - For the management of the clinical research data
 - eCRF, EDC
 - Unified format
 - International data standards

4 “S” of caBIG

- Start
- Share
- Standardize
- Speed

Potential caBIG solutions

- **Technical challenges can be addressed**
- **Standards for community providers from NCI**
- **Can address other issues that may have limited implementation of previous strategies:**
 - HIPAA (HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT OF 1996)
 - Reporting concordant/non-concordant results (quality)
 - Billing
 - Liability

Thank you!



Potential Collaboration on Clinical Epidemiological Studies and Prevention Trials in China



You-Lin Qiao, MD, PhD

Professor & Director

Department of Cancer Epidemiology (DCE)

Cancer Institute/Hospital (CI)

Chinese Academy of Medical Sciences (CAMS)

Peking Union Medical College (PUMC)

Cancer Institute/Hospital, CAMS



CICAMS Founded in 1958, is the largest comprehensive National Cancer Center in China. It can accommodate 1,100+ in-patients with an annual inpatient load of 10,000+ and outpatient of 240,000+. There are more than 1,600 employees including 220 professors and associate professors.

Four Broad Areas of Activity in Dept. of Cancer Epidemiology, CICAMS

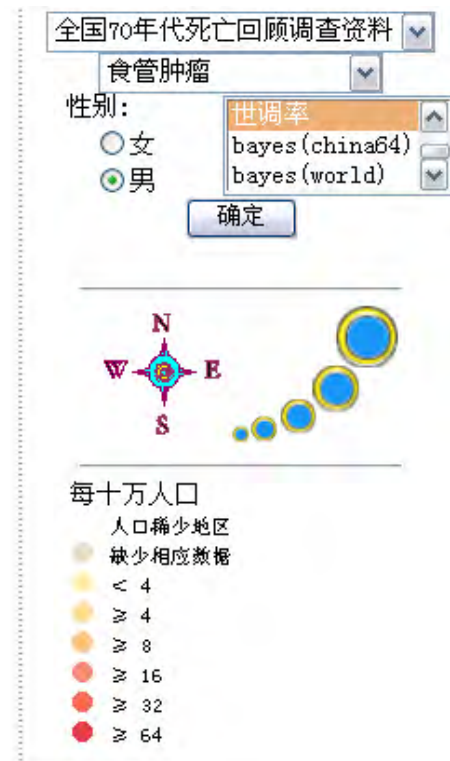
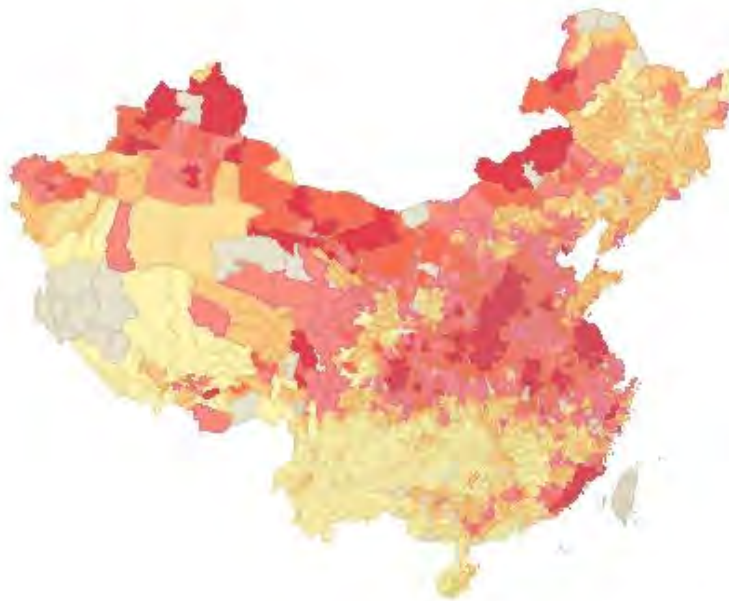
- I. Cancer Database, Academic Course and Outcome Research
- II. Observational Epidemiologic Studies
- III. Early Detection & Screening Research
- IV. Prevention Trials

I. National Cancer Database, Academic Course & Outcome Research

- Establishment of Chinese National Cancer Database (cancernet.cicams.ac.cn) (MOST)
- Cancer Database of National Data Sharing System for Medical Sciences (MOST)
- Cancer prevention and control academic course (CFC/pfizer)
- Outcome research on early detection/prevention of cervical and esophageal cancers (MOST/MOH)

China Cancer Data Sharing System (Supported by MOST)

Clinical Sciences Center
National Data Sharing System for Medical Sciences
(CSC/NDSS-MS)





Data Source

Mortality & Incidence



- China national cause-of-death surveys
- Data of cancer register
- Data of cancer register in Cixian Hebei
- Data of cancer register in Tianjin

Cancer prevention in areas with high risk



- Esophageal cancer prevention in Henan
- Cervical cancer prevention in Shanxi
- Lung cancer prevention in Yunnan

Clinical Oncology



- Radiation
- TMR from Cancer Hospital CICAMS
- TMR from Cancer Hospital Tianjin
- TMR from Cancer Hospital Ci county

Encoding Data



- Δ ICD10
- Δ GB6565 86
- Δ GB3304 82
- Δ ICDO
-

II. Observational Epidemiologic Research

- **Prospective study on the natural history of HPV infection, nutrition, immunologic factors and vaccine/chemo prevention for cervical cancer in Shanxi, China (N=13,000+)**
- **Environmental and biological monitoring pilot study for polycyclic aromatic hydrocarbons (PAH) in Linxian, China (NCI/NIH)**
- **Prevalence surveys of HPV infection and cervical neoplasia in China (N=8000, IARC/CCF/UNC)**
- **HCC BRIDGE Study: Expanding Knowledge of Hepatocellular Carcinoma Treatment and Outcomes in China (Bristol-Myers Squibb)**

Zhao FH, et al *Int J Cancer*. 2006;118(2):442-8. Shi JF et al. *Am J Epidemiol*. 2009;170(6):708-16. Li LK, et al. *Br J Cancer*. 2006; 95(11):1593-7; Dai M, et al. *Br J Cancer*. 2006; 95(1): 96-101; Wu RF, et al. *Int J Cancer*. 2007;121:1306-11.

III. Early Detection & Screening Research

- **Cervical cancer screening studies in Shanxi, China (SPOCCS I-II)**
N=2000+9000
(Terry Fox Foundation, CCF, NCI/NIH, UNC)
- **Screening technologies to advance rapid testing for cervical cancer prevention (START). N=12000,**
Grant of Bill & Melinda Gates Foundation
- **Early Detection of Lung cancer in Chinese Tin Miners in Yunnan (NCI/NIH)**
- **Early detection and treatment of esophageal cancer in North-central China (NCI/NIH)**

Qiao YL, et al: Lancet Oncology 2008;9(10):929-36. Wei et al; Gut. 2005;54(6):759.
Wang et al; Gut.2005; 54(2):187. Qu CX, JNCI. 2007;99(16):1240-7.

Screening Year	Study Population	Sample Size	Sensitivity (%)	Specificity (%)	Yonden's Index (%)
1999	Xiangyuan,Shanxi	1997	97.6	84.8	82.4
2001 2002	Xiangyuan and Yangcheng, Shanxi	9034	95.5	83.3	78.8
2003	Xiangyuan,Shanxi	1803	95.7	84.9	80.6
2004	Jing'an,Jiangxi	1995	96.7	82.8	79.5
2004	Shenzheng,Guangdong	1109	100	88.5	88.5
2004	Yangchen,Shanxi	721	93.8	87.8	81.6
2005	Wudu,Gansu	2034	78.1	93.8	71.9
2005	Shenyang,Liaoning	710	100	80.4	80.4
2006	Qinxian,Shanxi	2493	100	89.3	89.3
2006	Xiangyuan,Shanxi	884	100	86.3	86.3
2006	Beijing	795	100	87.2	87.2
2006	Hetian,Xinjiang	883	94.1	94.5	88.6
2006	Xinmi,Henan	879	100	88.7	88.7
2007	Shanghai	774	100	88.1	88.1
2007	Qinxian,Shanxi	818	100	88	88
2007	Wuxiang&Xiangyuan	2388	97.1	85.6	82.7
2008	Jiangsu	316	90	87.6	77.6
2008	Xiangyuan & QinXian	1056	96	86	82

***Physician-collection sample HC-2 HPV testing – Qiao et al¹**

IV. Prevention Trials Research

- **Nutrition Intervention Trials in Linxian – Followup Studies, (N=33,000; NCI/NIH)**
- **A study of Selenomethionine and Celecoxib as Chemopreventive Agents for Esophageal Squamous Dysplasia in Linxian, China (NCI/NIH)**
- **A controlled trial of endoscopic screening & prevention study for esophageal cancer in 3 Counties, China (Task Force of the 10th Five-Year Plan of MOST)**
- **HPV prophylactic vaccine clinical trials; MSD N=3000; GSK N=6000**

Prevention strategies and actions

- National cancer prevention & control strategy by MOH
- National cervical cancer prevention consortium (lead by Yu Peng)
- The Guidelines for early detection, diagnosis & treatment for 9 major cancers are reviewed by via national consensus meeting & endorsed by MOH (cervical Ca as the model);
- Two demonstration centers (Shenzhen & Xiangyuan) for cervical cancer prevention & control have been established by both MOH & CFC. (Lancet Oncology. Vol 6, Page 139-141, 2005)
- National cancer early detection/treatment program has been initiated in 2009 funded by MOH & MOF (10m cervical Ca, 1.2m breast Ca)
- Training course and WHO Guide book etc
- Government Task-Force for outcome research on CxCa prevention
- Recommendation of National CxCa prevention/control in review

Cancer Control Knowledge Into Action 2002 Global Initiative Programme



Planning

PLANNING

A practical guide for programme managers on how to plan overall cancer control effectively, according to available resources and integrating cancer control with programmes for other chronic diseases and related problems.

Cancer Control Knowledge Into Action 2002 Global Initiative Programme

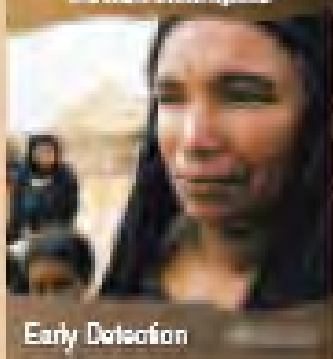


Prevention

PREVENTION

A practical guide for programme managers on how to implement effective cancer prevention by controlling major avoidable cancer risk factors.

Cancer Control Knowledge Into Action 2002 Global Initiative Programme



Early Detection

EARLY DETECTION

A practical guide for programme managers on how to implement effective early detection of major types of cancer that are amenable to early diagnosis and screening.

Pre-planning

CHINA

Example of a “top-down” planning process

An example of a “top-down” cancer control planning process is provided by the Programme of Cancer Prevention and Control in China (2004–2010) initiated in 2002 and launched in 2003. China is a lower middle-income country, with a centralized government structure. Cancer represents 20% of all deaths and is, at present, the leading cause of death in urban populations. Traditionally there has been excessive reliance on treatment-oriented approaches, neglecting prevention strategies.

Alarmed by rising cancer trends, the department for disease control of the Ministry of Health initiated the planning process. A core team was in charge of developing the plan in close coordination with the prevention and control of other diseases. The major difficulty during the planning phase was to agree on the objectives and priorities of the plan. Finally, the most relevant and feasible ones were selected. In June 2003, the plan was published on the web for comments from the public. Meanwhile suggestions were collected from more than 60 experts nationwide via mail. In August 2003, the final draft was approved at a symposium that brought together relevant leaders of the Ministry of Health and other experts.

The priorities of the plan include: prevention (e.g. tobacco control, hepatitis B vaccination, control of occupational risk factors); early detection and treatment of major cancer types (uterine, cervix, breast, stomach, liver, nasopharynx, colon and rectum); rehabilitation and palliative care; and expansion of cancer registries. The biggest problem encountered in implementation is insufficient funding to carry out the biennial action plan, which mainly focuses on early detection and a public education campaign. However, there are ongoing efforts to identify further funding to support the activities.

Source: Programme of cancer control and prevention in China, 2004–2010 (<http://www.chinacancernet.org.cn/links/english.html>, accessed 18 May 2006). Additional information provided by L. Kong, Deputy Director General, Disease Control Department, Ministry of Health.



Guideline of early detection for main cancer in China

THE LANCET Oncology

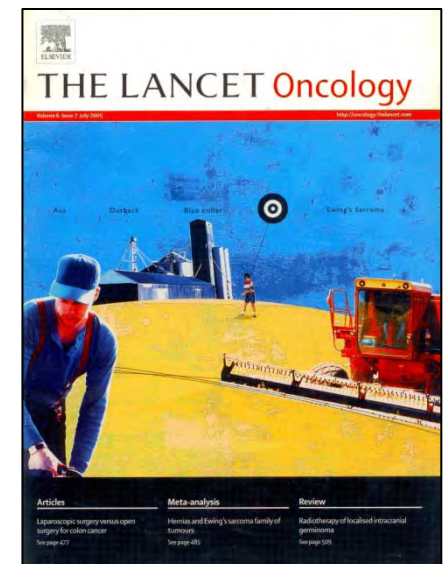
Volume 6. Issue 7. July 2005

Chinese government urged to tame cancer threat

Although China's gross domestic product secured its place as a recognised economic power with an increasing importance worldwide, chronic disease, such as cancer, is overshadowing the country's economic success. Cancer now claims 1.4-1.5 million lives a year in China, compared with 700 000 in the 1970s—equal to one in every five deaths. This mortality could double to 3 million in the next 20 years if the government fails to take effective measures now.

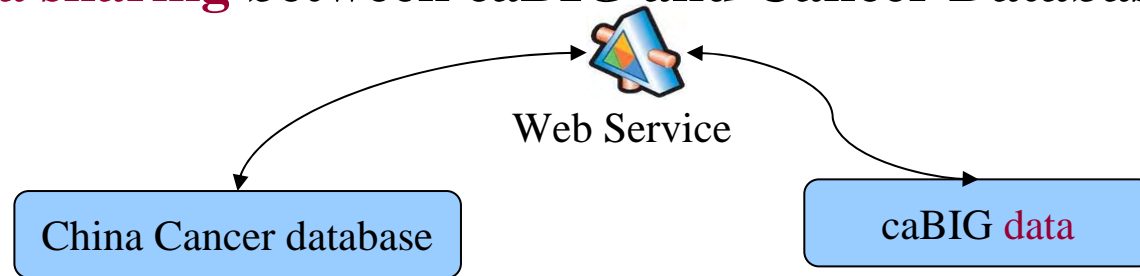


A symposium held in Hebei highlighted the fight against cancer



Potential Collaboration

1. **Data sharing** between caBIG and Cancer Database in China



2 . **Adoption** of caBIG **tools** in epidemiological studies and prevention trials

- Cancer Clinical Trial Suite in clinical and prevention trial
- Other caBIG **tools** in epidemiological study

3. **Development** of caBIG **tools** for China

- Information protocol share and localization.
- Development of data exchange tools.
- ...

Thanks for Listening and Welcome for Collaboration!

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